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THE
PHILOSOPHY
OF
NATURAL HISTORY.

BY THE LATE
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MEMBER OF THE ANTIQUARIAN AND ROYAL
SOCIETIES OF EDINBURGH.

VOLUME II.

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1799.)

TO HIS GRACE

THE DUKE OF MONTROSE.

MY LORD DUKE,

IN giving this Work of my late Father's to the world, I flatter myself that, while I discharge a duty to the memory of a Parent, I perform, at the same time, a not unacceptable service to the Public. The reception with which my Father's former productions of a similar kind were honoured, together with my knowledge of the attention which he paid to the perfecting the present work, by the acquisition of every information which inquiry or research could procure, may fairly inspire a certain degree of confidence in the favour it may expect to obtain. One circumstance indeed there is, which naturally creates some diffidence in offering this volume to the world, namely, that it is presented under all the disadvantages attending a posthumous work which the death of its Author has deprived of his corrections and revival. From this circumstance, however, it may, perhaps, gain as much on one hand as it loses

on another. While it may be exposed to the severity of criticism, it will conciliate the indulgence of candour, and the favour of humanity. A sense of those amiable qualities in your GRACE emboldens me to usher it into the world under the protection of your Name. Placed at the head of the *Society of Antiquaries of Scotland*, one of the chief purposes of whose institution is the extension of historical and literary knowledge in this kingdom; a work calculated for the promotion of Natural History and Science cannot be considered as foreign to the views of that Society, or to the notice of your GRACE as its President. As Secretary of that Society, I may be allowed to embrace this opportunity of presenting the volume to your GRACE, and of expressing, at the same time, the very high esteem which, in common with my country, I entertain for your GRACE's character, and of that consideration and respect with which I have the honour to be,

MY LORD DUKE,

With the profoundest respect and esteem,

Your GRACE's most humble servant,

ALEX. SMELLIE.

EDIN. Nov. 15.
1798.

P R E-

P R E F A C E.

IN a Preface to the first volume, I gave a short view of the origin, progress, and general design of this work. With regard to the execution, it becomes me to be silent. But I must be allowed to express my gratitude for the favourable reception I have obtained from public candour, or, perhaps, public indulgence. This circumstance, though highly flattering, acts as a depressing power on a second attempt. I feel a degree of dread, lest I should disappoint expectation, and lose the small portion of literary reputation I may have acquired. As my plan, however, cannot be completed without another volume, I must submit to my fate.

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The objects exhibited by nature to our observation are numerous, variegated, and connected. To give even a cursory view of the whole, would exceed the powers of any human being. For this reason, I have hitherto confined my remarks chiefly to the animal and vegetable kingdoms. In this second and last volume, I shall observe the same plan. The field is still extensive; and I shall endeavour to cultivate it, at least, with diligence.

The subjects I have selected for the present publication will not, I hope, be less entertaining and instructive than those of the former.

C O N-

C O N T E N T S.

C H A P T E R I.

	Page
<i>Of Method</i> - - - -	1

S E C T. I.

<i>Of the utility of Method in every department of Science, and particularly in Natural History—Methodical arrangement into tribes and families, both in the animal and vegetable kingdoms, is evidently founded in Nature</i> - -	ibid.
--	-------

S E C T. II.

<i>An historical and characteristical Account of the writings and arrangements of the principal ancient and modern Naturalists</i> - - - -	10
§ 1. <i>Analysis of Aristotle's History of Animals with Remarks</i>	ibid.
§ 2. ——— of Pliny, the Elder - -	18
§ 3. ——— of Ælian - - -	21
§ 4.	

	Page
§ 4. <i>Analysis of Oppian</i>	23
§ 5. ——— of <i>Gefner</i>	24
§ 6. ——— of <i>Wotton</i>	25
§ 7. ——— of <i>Belonius</i>	27
§ 8. ——— of <i>Rondeletius</i>	29
§ 9. ——— of <i>Salvianus</i>	30
§ 10. ——— of <i>Aldrovandus</i>	31
§ 11. ——— of <i>Jonston</i>	35
§ 12. ——— of <i>Willoughby</i>	36
§ 13. ——— of <i>Ray</i>	42
§ 14. ——— of <i>Artedi</i>	48
§ 15. ——— of <i>Klein</i>	50
§ 16. ——— of <i>Linnaeus</i>	54
§ 17. ——— of <i>Buffon</i>	59
§ 18. ——— of <i>Briffon</i>	69
§ 19. ——— of <i>Pennant</i>	74

CHAPTER II.

<i>Of the Multiplication and Continuation of Species</i>	78
--	----

S E C T. I.

<i>Of the division of Animals. into viviparous and oviparous—</i>	
<i>Some Animals belong to neither of these divisions</i>	ibid.

S E C T. II.

<i>An account of the principal Theories, both antient and modern, which have been published on this subject ; particularly with regard to the larger Animals</i>	79
§ 1.	§ 1.

. C O N T E N T S.

ix

Page

§	1.	Theory of Hippocrates	-	-	-	79
§	2.	—— of Aristotle	-	-	-	81
§	3.	—— of Fabricius ab Aquapendente	-	-	-	82
§	4.	—— of Harvey	-	-	-	83
§	5.	—— of Malpighius	-	-	-	90
§	6.	—— of De Graaf	-	-	-	93
§	7.	—— of Valisnieri	-	-	-	98
§	8.	—— of Leuwenhoek	-	-	-	103
§	9.	—— of Buffon	-	-	-	110
§	10.	—— of Bonnet	-	-	-	117

S E C T. III.

<i>Of Singularities in the Mode of Multiplying among certain Animals</i>	-	-	-	-	121
--	---	---	---	---	-----

S E C T. IV.

<i>Of Partial Reproduction—Some Animals, from peculiarities in their constitutions, have the power of reproducing parts of their bodies which have been lopped off—Supposed Causes of this surprising Faculty</i>	-	-	-	123
---	---	---	---	-----

S E C T. V.

<i>General Reflections and Observations—Supposed Effects of the Imagination upon pregnant Animals</i>	-	-	129
---	---	---	-----

CHAPTER III.

SECT. I.

Page

<i>Of Mules, or the anomalous productions of Nature—Mules sprung from the Horse and As not entirely unprolific—Of the Fumar, an animal supposed to be produced between the Bull and Mare—Different species of small Birds unite, and their progeny retain the power of multiplication</i>	-	141
---	---	-----

SECT. II.

<i>Of a Plan for raising the raw material of Silk in Britain—The texture of Insects is extremely ductile—From many circumstances in their history, it should appear that different kinds intermix, and produce new and fertile species—Upon this view of Nature, a probable plan for producing the raw material of a Silk Manufacture in Britain is submitted to the consideration of the Public—The experiment is easy, attended with no expence, and highly worthy of a trial</i>	-	149
---	---	-----

CHAPTER IV.

<i>Of the Varieties of Man which have hitherto been discovered in every region of the Globe—Varieties in Colour—in Stature—in Figure and Features—in Manners and Customs—in Religion, and Religious Opinions and Ceremonies—Of Cannibals both ancient and modern—Of Human Sacrifices in the</i>	
---	--

Old

CONTENTS.

xi

Page

<i>Old and New Worlds—Of War and Warlike Instruments— Of Agriculture, and the Spontaneous Productions of the Earth—Of Marriages, Burials, Civil Government, Arts and Manufactures, &c. &c.</i>	- - -	157
--	-------	-----

CHAPTER V.

<i>Of Sleep and Dreaming</i>	- - -	361
------------------------------	-------	-----

SECT. I.

<i>Of the Nature and efficient Causes of Sleep and Dreaming— Dreams characteristic of the Dreamer—Instead of a Diary, a Nocturnal would more effectually unfold the real Disposi- tions of Men—Specimen of a Nocturnal—Utility of Dream- ing—Dreams not peculiar to Man</i>	- - -	ibid.
---	-------	-------

SECT. II.

<i>Of the final Causes of Dreaming</i>	- - -	369
--	-------	-----

SECT. III.

<i>Every Person may derive Advantage from Dreams</i>	-	375
--	---	-----

SECT. IV.

<i>Of Ominous Dreams</i>	- - -	381
--------------------------	-------	-----

SECT. V.

<i>Of the Second Sight, or a Prophetic Power</i>	-	385
--	---	-----

SECT.

SECT. VII.

Some unconnected Facts concerning Sleep and Breathing

CHAPTER VI.

Of those Animals who sleep, or continue in a torpid state, during Winter

405

CHAPTER VII.

Of the Language of Beasts

413

CHAPTER VIII.

Some Remarks on the Comparative Pleasures and Sufferings of Animals

445

CHAPTER IX.

Of Poisonous Animals

461

Conclusion of the PHILOSOPHY OF NATURAL HISTORY

481

THE
P H I L O S O P H Y
O F
N A T U R A L H I S T O R Y.

C H A P T E R I.

Of Method.

S E C T. I.

Of the utility of Method in every department of Science, and particularly in Natural History—Methodical arrangement into tribes and families, both in the animal and vegetable kingdoms, is evidently founded in Nature.

METHOD is the order and disposition of our thoughts, relating to a particular subject. It is so essential to science in general, that the merit of any composition is principally estimated by the justness and precision with which the authors ideas are arranged.

In Composition, whatever be the subject, distinct ideas are not only necessary, but those ideas must be disposed in a certain order or method, corresponding to the general design of the performance. Neither is method, in this case, a matter of choice. It is the result of the particular principles and mode of reasoning adopted by the writer. To enumerate the many advantages arising from methodical arrangement in science, is foreign to our purpose. Without method, it is impossible to reach perspicuity, the capital object in every composition.

In describing a vast variety of objects possessing some universal and common qualities,—every individual, at the same time, having some qualities peculiar to itself, some generic or specific differences which serve to distinguish it from the whole group, and to constitute a particular character,—methodical distribution is not only useful, but indispensably necessary.

In such a multifarious subject as natural history, which has for its object the numerous productions of animate and inanimate nature, it was necessary to invent some mode of generalising our ideas. The number of objects is so immense; the general figure, situation and structure of parts in the animal tribes; their manner of living, generation, moral character, or disposition of mind, the artifices employed in defending themselves and attacking their enemies, in procuring food and providing against the inclemencies and vicissitudes of the different elements, their utility to mankind, and the relations they have to each other; these, and many other circumstances, are so various and complicated, that, without a methodical distribution into classes and genera, although perfectly arbitrary, and though no traces of any connecting principles were discoverable in the productions of nature, the
mind

mind would instantly recoil, and for ever abandon the study of Natural History, as a heap of undigested materials which it was impossible to bring into a scientific form, which consequently might distract and confound, but could never afford any rational entertainment to an intelligent being.

But Nature, however numerous and diversified in her productions, presents no such disjointed and incongruous assemblages. On the contrary, there is not a single being in the universe, whether animate or inanimate, endowed with a set of powers and qualities entirely peculiar to itself. If such a body really existed, and could be recognised by our senses, so powerful is the impression received from the general concatenation of natural objects, that we could not hesitate a moment in pronouncing it miraculous. The variety of objects is almost infinite; but these varieties are not effected by large strides, leaving ample room for farther gradations. Their limits, on the contrary, are so narrowly, so nicely defined, that considerable attention, joined to a habit of accurate observation, is necessary to discern them. The general utility of this great and benevolent plan of operation is apparent. Not to mention the other advantages of mutual dependence and relation, this variety and uniformity, those beautiful connections and distinctions, allure us to the study of Nature, afford sufficient materials for the construction of science, give rise to all our abstract ideas, and, of course, extend and enlarge our reasoning faculties.

Every man of ordinary understanding, although he has given but little attention to the animals which surround him, has been so long accustomed, not from instruction, but observation, to arrange them into the four grand natural Classes of Quadrupeds, Birds, Fishes, and Insects, that he is unable to recollect either the time or manner

in which he acquired the idea of this distribution. Without bestowing a more particular attention, such a person cannot be supposed to investigate those less obvious relations which serve as a basis for generic and specific distinctions.

But a stricter scrutiny into the animal creation will soon enable us not only to discern general analogies and connecting principles, but likewise a number of particular and striking relations which characterise and constitute tribes and families.

So many common qualities occur in the great natural class of quadrupeds, that it is almost unnecessary to mention them. They have an equal number of legs; the number of eyes and ears are the same; there is an evident similarity in the general figure of their bodies; their skins are covered with hair; they are all viviparous, and suckle their young; their manner of generating and producing is nearly the same. The similarities in their internal structure are not less remarkable. They are all furnished with lungs to answer the purposes of respiration; their hearts consist of two ventricles and two auricles; their blood is red and warm, &c.

Notwithstanding the many similarities that take place in the external form and internal structure of the class of quadrupeds, the characters and features by which Nature has distinguished the different genera or families are still more numerous. These distinctions are so various, and may be discovered in so many different parts of the body, in the food, dispositions, and peculiar instincts, that they have given rise to a great diversity of arrangement adopted by different systematic writers.

M. de Buffon, indeed, makes the variety of methodical distributions an argument against systematic arrangement in general, as implying an uncertainty and deficiency in the natural characters. We shall have occasion afterwards to take notice of the method adopted by this ingenious and eloquent author, and shall only, in this place, mention some particulars which, we imagine, will be sufficient to convince the candid inquirer, that methodical distribution is not only useful in the study of Natural History, but that Nature has actually presented her productions to us, not in an immensity of unconnected individuals, but in larger or smaller groups, linked together by unambiguous relations. These groups are commonly known by the name of *genera* or *families*, every individual of which ought not only to possess the general properties of the class, but likewise a family character and likeness. The concurrence of these circumstances is necessary to the formation of a *natural genus*, in opposition to *artificial* assemblages, to which, in some cases, most systematic writers have been obliged to resort, partly from the want of a sufficient acquaintance with particular animals, and partly owing to some original imperfection in their principles of arrangement.

The cat-kind, the *felinum* genus of Mr Ray, the *felis* of Linnæus, comprehends the lion, tigre, panther, leopard, ounce, the cat-a-mountain, the domestic cat, and the lynx. The bare inspection of these animals, or their pictures, without knowing any thing of their history, will at once convince us of their mutual relations, and of the propriety of placing them under one genus. But, after we have learned their history, and discovered the similarity in their dispositions, in their food, manner of seizing and devouring their prey, and other circumstances in their oeconomy, we can no longer hesitate in pronouncing them a natural genus. The horse, the ass, and
the

the zebra ; the different species of monkies ; the bats ; the wefels ; the squirrels ; the different species of deer ; the goat-kind ; the sheep-kind ; the ox-kind ; the armadillos or tatus ; the hare-kind : These, and many others, are in the same circumstances, and have an equal title to be considered as natural genera.

We might enumerate similar examples among birds, fishes, and insects ; but those who are unacquainted with Natural History may believe us when we assert, that the same distinguishing features, the same family-connections are to be found in the animals belonging to those classes as take place among quadrupeds ; and the Naturalist has no occasion to be informed of a fact with which he is already sufficiently acquainted.

We are now fully authorised to lay it down as an established truth, that there is a general subordination and concatenation in the animal kingdom, that Nature has actually distributed her productions into classes, and genera ; and consequently that those systematic writers who have most closely followed the order of Nature in their methodical distributions are entitled to the highest rank in the public estimation.

But, although classes and genera be evidently founded in nature, a difficulty still remains. In order to facilitate the investigation of animals, naturalists have found it necessary to make intermediate divisions between the classes and the genera. These divisions are called *orders*. Even in this article Nature is not altogether deficient. We are already acquainted with many instances, in the animal kingdom, of particular relations by which several genera of the same class are peculiarly connected. A thorough knowledge of these natural relations

tions is all that is necessary for the construction of a perfect method. But there is such a variety of circumstances to be learned, of which we are as yet perfectly ignorant, that the industry and experience of many ages will still be necessary, if indeed we can ever hope, for the acquisition of this great desideratum in natural history. A similarity in the external figure or internal structure is not enough. The dispositions, manners, instincts, œconomy, &c. must likewise be thoroughly known. We are at present far from being sufficiently acquainted with these, and many other important circumstances, even with regard to several of our native animals. How then can we expect to see a perfect methodical distribution? What right have we to censure systematic writers for not arriving at an impossible degree of perfection in their method? It is cruel and injurious. To receive with joy the light they communicate, to employ their knowledge and experience in the further advancement of the science, and to grant them the tribute of praise in proportion to the merit of their respective performances, would be more consistent with that candor and humanity which ought ever to be the inseparable concomitants of philosophy.

It is principally in the formation of orders that naturalists have so widely differed in their systems. Ignorant of the genuine relations of nature, they have been obliged to have recourse to artificial diagnostics. In the class of quadrupeds, the characteristic signs are taken from the feet, from the teeth, the paps, the parts of generation, &c. There is still a greater diversity in the orders of birds, fishes, and insects. Particular parts of the body are fixed upon, not because these parts are pointed out by Nature as infallible marks of distinction or relation, but because a perfect method, in the present state of the science, is impossible; and any method is preferable to confusion.

sion. It is vain, therefore, to dispute about the propriety or impropriety of the assemblages in the orders of a Ray, a Linnæus, a Klein, or a Pennant. Till we acquire a more perfect knowledge of the history, as well as of the figure of animals, it is of little importance whose system be adopted, provided the characters be clear, and all the facts that are at present known be distinctly related. Were every naturalist of the same sentiments with regard to this point, many incumbrances with which natural history is now loaded would be removed; the student would not be distracted and retarded by an infinity of synonyms; the science would become more simple and intelligible; and, of course, its bounds and the number of its votaries would soon be greatly augmented. I mean not that all attempts towards the perfection of system should be laid aside; but that, in the present imperfect state of the science, it is to be regretted, that so much time and genius should be expended in fruitless disputes, and in the augmentation of methods and terms. To add to the number of facts and observations, to describe with accuracy and precision, to separate fiction from truth, to investigate the æconomy and moral character of animals, and to render their utility to mankind more extensive: These are objects more worthy of the attention of philosophers, more agreeable to ingenuous minds, and more correspondent to the genius of the science.

Nothing further need be said with regard to the utility and defects of method in general. Observations of a more particular nature will occur in explaining some of the principal methodical arrangements. A short view of the methods invented by systematic writers will make the reader acquainted with the different and successive efforts towards the improvement of method, and give us an opportunity of unfolding more distinctly the reasons by which we
have

have been determined, in the following work, to adopt one in preference to all the rest.

In most authors who have written professedly upon the history of animals, attempts towards methodical arrangement may be discerned. Aristotle, Pliny, and Ælian perceived the utility of method. But they seem never to have dreamed of the practicability of teaching the student, by the help of a system, partly natural, partly artificial, to investigate the name, and, in many instances, even the nature and dispositions of an animal he never saw before; or to be able, in a few minutes, to pronounce with certainty, that it had never hitherto been described by any author. This curious discovery was reserved for a later and more scrutinizing age.

Book 7th gives a particular account of the circumstances preceding and following the generation of man, viz. puberty, the menstrual flux, signs of conception, the time of gestation, the number of young, the milk, the resemblance of children to their parents, &c.

The first fifteen chapters of the 8th book contain a history of the food and manner of living of the different tribes of animals. From the 15th to the 24th, we have an account of such animals as conceal themselves at certain seasons of the year, the migration of birds, and what animals renew their age by moulting, or by casting their skin. From the 24th chapter to the end of the book, the author enumerates the diseases of animals, the situations and circumstances that are favourable to health or productive of diseases, and the seasons when they are most proper to be used for food.

In the first chapter of book 9th, the mental differences that take place in males and females are pointed out. The remainder of this book treats of the friendly or hostile dispositions of certain animals to one another, and of their characters; it likewise contains some general descriptions and specific distinctions.

From this short view of the method and contents of Aristotle's history of animals, the general design of the author may be collected. He begun with investigating the manners, dispositions, and structure of individuals. Aristotle was enabled to execute this important task to more advantage, perhaps, than any other person either before or since his time. Not to mention the extent of his own genius, Alexander provided him with live animals from every quarter of the then known world. These were supported by the munificence

ficence of a monarch who merited the epithet of Great, not for the boundless ambition of his heart, not for the slaughter of millions of his own species, but for the protection and encouragement he afforded to the greater Aristotle.

After spending much time and labour in investigating the characters and dispositions of animals ; after making repeated experiments in order to discover the secret springs of their actions, the extent of their capacities, their affections and aversions ; after satisfying himself with regard to these and many other interesting articles, Aristotle's next object was, how to digest those materials so as best to promote the science of nature. To give a particular description and history of every individual neither corresponded with the genius of the author, nor with the state of the science at that time. To investigate the relations and differences which serve to connect and distinguish the various tribes of animals, was the capital object of the learned author. Like the great Bacon, instead of retailing idle fictions, or facts founded only upon ignorance and credulity, Aristotle perceived the necessity of ascertaining the genuine principles of the science by actual experiments. Some idea may be formed of the number of those experiments, and the judgment with which they were conducted, by the extensive and accurate conclusions the author has drawn from them. Whoever reads Aristotle's history of animals with the same view with which he reads some modern authors will be greatly disappointed. Trifling anecdotes, marvellous feats of strength, ferocity, or cunning, addressed to the imagination in the language of declamation, are not to be expected in the works of an Aristotle.

His chief object was to reduce into a scientific form a branch of
natural

natural knowledge, which had hitherto consisted only of a chaos of detached, uncertain, and often fabulous narrations and descriptions. The happy circumstances in which he was placed, joined to the uncommon abilities with which this extraordinary person was endowed, enabled him to unfold the principles of natural history with such amazing success, that, to this day, no system has been attempted, the principles of which have not evidently been derived from Aristotle. Analogies and distinctions are not only drawn from magnitude, figure, faculties and dispositions of mind, but from the instruments of motion, the teeth, the eyes, the genitals, and, in a word, from every external and internal part of the body.

Having said so much on what appears to be the nature and design of Aristotle's history of animals, it now becomes necessary to disclose the principal intention of being so particular.

The eloquent M. de Buffon, and his learned and industrious friend M. Daubenton, declared enemies to methodical arrangement themselves, betray a strong inclination to press this illustrious ancient into their service. They allege, that Aristotle, so far from having a design to establish the *principles of system*, shows a sovereign contempt for methodical distribution, not only by the plan he has followed, but in different parts of the work itself; and yet, by way of compliment to the author, they say, "that it is necessary to go back
" to the days of Aristotle for the general *principles of the division of*
" *animals* *." After mentioning the sources from which Aristotle, in his first book, derives the distinguishing characteristics of different animals, these gentlemen insist, that the author never meant them to be

* Hist. Nat. par Buffon, vol. 4. p. 142.

be the foundation of a modern nomenclature or system, similar to those of Ray or Linnaeus*.

With regard to this we are perfectly agreed, but for a very different reason. Aristotle saw the perplexed state of the science, or rather perceived that the natural history of animals had not hitherto been reduced to a scientific form. He therefore applied the whole force of his mind towards the investigation of general principles, to serve as a basis for system, and as a model for future writers. But, after the labour of many years, and encountering numberless difficulties, even making every allowance for the extent of his capacity and foresight, it can hardly be supposed that Aristotle could ever conceive the possibility of a system so perfect as either that of Ray or Linnaeus.

Buffon and Daubenton further allege, that Aristotle was too well acquainted with the nature of animals, to attempt a regular division of them into classes, orders, genera, and species; that he only used generic terms in compliance with the ideas of the vulgar, who uniformly give the same name to objects endowed with similar qualities; but that he formally proscribes all subdivisions of the genus, as being partly forced, partly impossible; and because, in forming the different branches of those subdivisions, objects are separated and dispersed which ought always to be placed under one point of view: Besides, that, in subdividing the genus, we are obliged to use negative characters: That Aristotle rejects negative characters, because no distinctions or relations can be established upon an idea of privation, and because a thing which does not exist cannot be divided into species†.

This

* Hist. Nat. par Buffon, vol. 4. p. 143.

This representation of the sentiments of Aristotle concerning methodical arrangement induced me to peruse his history of animals with more than ordinary attention; and, if I am not greatly mistaken, I have discovered the only reason which could induce the author to drop a few expressions which, at first view, seem to justify Buffon and Daubenton's opinion.

Whoever reads the book will soon perceive that the word *genus* is often used in the same sense as *class* or *order* among the moderns; and sometimes it is limited to the same idea that *we* affix to *genus* *. This circumstance frequently gives rise to ambiguity.

Our author, as formerly observed, never intended to give a particular description and history of every species. Man being the principal and best known animal in the creation, Aristotle takes him as a standard, and describes minutely his whole frame and movements. In describing the inferior tribes of animals, he seldom descends to minutiae, but keeps chiefly in view their relations and discrepancies. Aristotle's book, therefore, is not a natural history of animals in the modern sense of these words. It consists only of philosophical dissertations on the general structure, manners, and dispositions of animated beings. If any person wishes to learn Aristotle's account of the lion, tiger, horse, elephant, or any other animal,

* Sunt autem genera summa quaedam, quibus animalia distinguuntur. Sunt vero haec: *Unum* avium; alterum piscium; tertium cetorum; quae omnia constant sanguine. Est et *aliud* eorum genus, quae testa conteguntur, quod ostream appellatur. Item *aliud*, quod molliore testa operitur; caeterum nomine uno comprehensum est; quales locustae et cancrorum genera quaedam, atque gammarorum. Praeterea aliud molluscorum; cuiusmodi lolligines, et lollii, et saepiae. Postremo, *insectorum* quoque genus est, quae omnia carent sanguine.—*Arist. Hist. Animal. edit. Scalliger, lib. 1. cap. 7.*

mal, he must peruse the whole work before he can collect every thing the author has said concerning them. His facts and observations are numerous; but, with regard to particular animals, these are not to be found in one place, nor in treating of an individual subject in the form of a continued history. On the contrary, his facts are always employed to support the principles which he at the time is endeavouring to establish.

To an author composing a book upon Aristotle's plan, therefore, a scrupulous subdivision of the different classes or genera could have answered no useful purpose. In establishing or investigating general principles, it is necessary to have a free and unlimited range through the whole circle of nature. Accordingly Aristotle, in treating of generation, the senses, the instruments of motion, &c. instead of taking an individual for his subject, gives all the varieties that can be collected from the whole animal creation: And this conduct he uniformly pursues, whatever be the subject he is handling.

Such being the plan of our author, it surely cannot surprise any person to see him occasionally observing, "that as many animals
" are possessed of some common qualities, it is unnecessary to treat
" of these qualities as separately existing in different subjects."

It is an observation as old as Pliny, that there is not any book from which a man may not learn something: And it may likewise be observed, that, when a man reads with a view to support a preconceived opinion, there is hardly any book in which he will not at least imagine that he has found something to his purpose. We will venture to affirm, that no man, who had not previously determined to condemn the methodical distribution of animals, could have ever

discovered that Aristotle had the smallest inclination to be of the same opinion. Instead of endeavouring to learn the general design of the book before us, were we, in imitation of Buffon and Daubenton, to pick out all the passages that actually favour methodical arrangement, this chapter would be enormously swelled with quotations.

§ 2. OF PLINY, THE ELDER.

AFTER reading Aristotle, it is natural to expect that every succeeding writer upon the subject of animals would have either adopted his principles or endeavoured to improve them. But, on perusing the works of the successors of that great philosopher, this expectation is by no means gratified. Aristotle demonstrated the necessity of method and of accurate description. But, instead of following his example, the very idea of method, whether natural or artificial, seems to have been almost entirely lost for many centuries. Had the ancients been more explicit in their descriptions of natural bodies, their inattention to method might easily have been pardoned. But, with regard to this most essential article, they are so exceedingly defective, that it is often impossible to discover the subject of which they are treating. They suppose the reader to know every substance merely by the name they chuse to give it. If any character by which the body may be distinguished appears in their writings, it seems to escape from the author as it were by accident. Even when a description is attempted, the permanent and essential characters are generally missed; and nothing but accidental and mutable characters, or, which is still worse, characters that equally belong to other substances, are exhibited. Nay, in describing species, the characters of
the

the genus itself are often totally omitted *. Were it difficult to demonstrate the utility of methodical distribution by arguments of a different nature, it would be sufficient to refer the opposers of method to the ancient writers of natural history, to shew how much confusion and ambiguity the want of such distribution occasions.

But, although the ancient naturalists were not so attentive to method and accuracy of description as could be wished, we must not therefore suppose them to be destitute of merit. On the contrary, their writings are distinguished by a grandeur and elevation of sentiment which few moderns have been able to reach. Despising every thing that appears to be trifling or insignificant, they exalt our ideas of nature, and are particularly solicitous to shew that all her productions answer some useful purpose to mankind.

The want of method and precision of description is peculiarly to be regretted in the works of the learned and laborious Pliny. His genius was too comprehensive to be limited to any branch of natural history. His ideas of this subject were not confined to animals, vegetables, and minerals, but extended to every production of Nature exhibited either in the heavens or the earth. Agreeably to these ideas, Pliny's History of Nature, besides a history of the animal, vegetable, and mineral kingdoms, comprehends an abridgement of all that the ancients knew in geography, astronomy, botany, agriculture, gardening, medicine, the liberal arts, &c. His style is concise, nervous, and elevated. His knowledge is profound, and his method of reasoning clear and philosophical. But, as it is foreign to our present design, to give an account of Pliny's manner

* Vid. Plin. Hist. Nat. cap. 8. et alibi passim.

of treating every subject, we shall confine ourselves to his history of animals.

Pliny, in this part of his work, begins with man. He does not, however, like Aristotle, give a description of the structure of the human body. His chief objects are the external figure of men, the dispositions, manners, and customs of different nations. Here our author discovers an extensive erudition, and a deep knowledge of human nature.

A strange mixture of character, however, appears in most parts of Pliny's writings. A mind stored with every species of literature, a refined taste, a sceptical scrutinizing temper, combined with a considerable portion of superstition and credulity. He gravely tells us of a certain northern nation, called Arimaspi, who have but one eye in the middle of their foreheads ; of a country inhabited by wild men with their feet behind their heels ; of a nation of hermaphrodites mutually impregnating each other ; of a people with a couple of pupils in each eye ; of a species of men with dogs heads ; of another species with eyes in their shoulders ; of a third species who have no mouths, and are nourished solely by smelling, &c. A number of extravagancies of this kind are to be found in the second chapter of the 7th book. Pliny indeed generally quotes his authorities for such absurdities ; but, from his manner of writing, and his arguments in favour of this species of credulity contained in the first chapter of the same book, it is plain, that he firmly believed, or at least means that his readers should believe, most of those ridiculous chimeras.

After mankind, Pliny treats of land-animals, as distinguished
from

from aquatics. In this part of his subject he observes not the least vestige of order. It is a mere jumble of quadrupeds, serpents, frogs, lizards, &c. Next follow the aquatic animals; then the birds; and, lastly, the insects. The order in which these last classes are treated is exactly of a piece with that in the first class. Besides, he even mixes and confounds the very order which he seems to follow*.

Upon the whole, notwithstanding Pliny's deficiencies with regard to method and description, his history contains the greatest part of the natural knowledge of the ancients, compiled indeed from other authors, but managed with such taste and address, that the whole has the appearance of an original composition.

§ 3. OF ÆLIAN.

THIS author was a Roman, and lived under the Emperor Adrian. He was, however, so fond of the learning of the Greeks, that, in his compositions, he preferred their language to his own. Though he has written upon other subjects, he acknowledges, that his genius had a peculiar bias towards natural history. He therefore chose that subject for his principal work, which he entitled, *Of the Nature of Animals*.

The work is divided into seventeen books: These divisions do not result from the nature of the composition, but seem to have been made merely for the conveniency of the reader. Aristotle, as a natural historian, astonishes us with extent of knowledge and depth of penetration: The amiable Ælian addresses himself, in the gentlest manner,

* Vid. Plin. Hist. Nat. lib. 8. 9. 10. 11.

manner, to our reason and imagination, warms our hearts with the love of virtue, and excites a sovereign contempt of every action or sentiment beneath the dignity of our nature.

Ælian's favourite aim was, to rouse the sentiments and enforce the practice of genuine morality. Arguments drawn from the beauty of virtue and the deformity of vice were as common and as ineffectual in his days as in ours. He therefore laid hold of another and more powerful principle of human nature. Being well acquainted with the manners and dispositions of the animal creation, instead of painting human heroes and human miscreants, Ælian stimulates our pride by the generosity, friendship, gratitude, courage, meekness, resignation, modesty, parental affection, and temperance, exhibited in the characters of particular animals; and excites our aversion by the illiberality, selfishness, ingratitude, pusillanimity, ferocity, impatience, obscenity, unnaturality and gluttony, displayed in the dispositions of others.

In composing a book with this view, we cannot suppose that the author would find it necessary to cramp himself with a strict connection in the different parts of his work, far less to write in the form of a system. Ælian's whole book, on the contrary, consists of unconnected anecdotes concerning animals, either derived from his own experience or collected from the writings of others. In the 37th chapter of the eleventh book, however, he has occasionally collected Aristotle's principles of the division of animals, and reduced them into such order as would make no contemptible figure in a modern synopsis. Aristotle's chief attention was directed to the external and internal structure of animals, in order to ascertain the principles and facilitate the study of natural history. Ælian steers an opposite course.

course. He seldom or never takes notice of external forms or qualities, but confines himself entirely to mental character and dispositions. It requires no depth of penetration to discover many anecdotes which have the air of fable and credulity: But a reader endowed with a moderate share of good nature will find little difficulty in pardoning faults of this kind. The author has enriched his work with a multitude of genuine and uncontested facts. If he sometimes relates stories that require more faith than his reader is possessed of, he generally either quotes his authority, or gives a hint that he does not believe them himself. Besides, in many stories of this kind, it is easy to perceive that the moral is *Ælian's* principal object.

§ 4. OF OPPIAN.

OPPIAN was a native of Cilicia, and flourished under the Emperors Severus and Antoninus Caracalla. He composed two excellent poems in the Greek language, and presented them to Antoninus, who was so delighted with them that he recalled Agestilaus, Oppian's father, from banishment, and farther rewarded the author with a piece of gold for every verse. The subjects of those poems are fishing and hunting. Though Oppian died in his 30th year, his poems discover a brilliancy of genius, a correct taste, a maturity of judgment, and a compleat knowledge of ancient learning. Natural history, however, seems to have been his favourite study. In his poem on fishing, a vast variety of fishes are described with surprising accuracy and minuteness; and, in the poem upon hunting, the principal quadrupeds are painted in lively colours. Oppian does not, however, confine himself to description alone: He frequently gives a pretty compleat

complete history of the manners, dispositions, and œconomy of the different animals introduced in his poems. Although, from the nature of the performance, we cannot expect that the author should write in a systematic strain ; yet he discovers an intimate acquaintance with the principles upon which system is founded. It is remarkable, that Oppian, though possessed of a warm poetical fancy, has rejected most stories that favour of fiction and credulity.

§ 5. OF GESNER.

CONRAD. GESNER a physician at Turin, published a natural history of animals in the year 1551-58, consisting of four large volumes in folio. The subdivisions of his classes are entirely regulated by the letters of the alphabet, and consequently deserve no further notice. He indeed makes an apology for this conduct. He allows that methodical distribution is more philosophical ; but he prefers the alphabetical arrangement on account of his numerous philosophical observations, which he considers as the most valuable part of his work. As this author has collected every thing that had been said upon animals by ancients and moderns, by poets, philo'sophers, physicians, shepherds, grammarians, &c. in all countries and languages, his work may be of use to some readers ; but his prolixity is insufferable, particularly his philological discussions. In a word, Gesner's natural history may be considered as a rude quarry from which some valuable stones may be dug ; but the labour of removing the rubbish overbalances their intrinsic worth. In the historical part, there are many valuable anecdotes, blended with a variety of fabulous imperinences.

§ 6. OF WOTTON.

IN the history of particular sciences, there appears, at certain periods, a strange inattention to facts and principles previously discovered. Aristotle, above two thousand years ago, unfolded the principles of natural history in the most simple and perspicuous manner. But the spirit and design of his book were either never fully understood or unaccountably neglected by all the subsequent writers upon this subject, till towards the middle of the 16th century.

At this period, there arose, in different parts of Europe, several learned and ingenious naturalists, who perceived that all animated beings were connected by certain mutual relations; that these relations had been too much neglected by preceding authors: and that this inattention to the order and concatenation of objects was the principal reason why the knowledge of nature was so little cultivated, and so difficult to be attained. Methodical arrangement, therefore, became a capital object of attention; and most writers after this period were more or less successful in their arrangements, according to the acuteness of their observation, and the extent of their capacities.

EDWARD WOTTON, a physician at Oxford, composed a volume upon the distinguishing characteristics of animals, which was published at Paris in the year 1552, and inscribed to Edward VI. King of England*.

He begins with an enumeration of the peculiar qualities by which

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* Edwardi Wottoni Oxoniensis de differentiis animalium libri decem. Lutetiae Pa-

the various species of animals are distinguishable from each other: These distinctions are derived from a multiplicity of circumstances; from the senses, external and internal parts, the food, affections and aversions, manners, colour, actions, instruments of motion, the elements in which they live, their modes of generating and producing, &c. Having executed this part of the work with great judgment and learning, Dr Wotton proceeds to give a more particular account of the genera and species, which he classes in the following manner:

I. Sanguineous, or animals with red blood.

II. Exanguinous, or animals with transparent or colourless blood.

The first class is divided into five orders, viz. 1. Man, as being the head of the animal creation. 2. Viviparous quadrupeds. 3. Oviparous quadrupeds and serpents. 4. Birds. 5. Fishes.

The second class he divides into two orders, viz. 1. Insects. 2. Exanguinous aquatic animals.

The viviparous quadrupeds are subdivided into, 1. Digitated, or toed, as apes, dogs, &c. 2. Cloven-hoofed, as the cow, the sheep, &c. 3. Whole-hoofed, as the horse, the ass, &c. Under oviparous quadrupeds are comprehended frogs, lizards, &c. Serpents are added on account of their similarity.

The birds are subdivided into, 1. Fidipedes, or such as have unconnected toes, as the gallinaceous kind, &c. 2. Carnivorous, as the eagles, vultures, &c. 3. Aquatic birds, which are again distinguished into such as frequent the shores and marshy places, as the cranes, the snipes, &c. and such as are web-footed, as ducks, &c.

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The fishes are subdivided into, 1. Cartilaginous, plain, oblong, and long. 2. Saxatiles, or those which frequent stony places. 3. Cetaceous, or the whale-kind.

The insects are subdivided into, 1. Such as build nests or combs, as the bee, wasp, &c. 2. Such as are furnished with a proboscis. 3. Such as have their wings inclosed in a crustaceous sheath, as beetles, &c. 4. Caterpillars. — To the arrangement of the insects, our author seems to have paid less attention than to that of the other orders of animals; for he has not availed himself of many excellent distinctions which he had pointed out in the beginning of his ninth book.

The exanguous aquatic animals are subdivided into, 1. Soft, as the cuttle-fish, &c. 2. Crustaceous, as lobsters, crabs, &c. 3. Testaceous, or shell-animals. 4. Zoophyta, as the spongia, &c.

Dr Wotton's descriptions are not only concise and elegant, but the economy and dispositions of the different animals are painted in a lively and entertaining manner. His taste in composition is chaste and unaffected. Though well acquainted with the writings of the ancients, he does not encroach on the patience of his readers, or augment the size of his book, by unnecessary and tedious quotations.

§ 7. OF BELONIUS.

PETRUS BELONIUS published a volume de Aquatilibus, at Paris, in the year 1552. Under aquatic animals, Belonius comprehends the cetaceous fishes, the hippopotamus, the otter, the water-rat, and

other amphibious animals. He divides the whole into two orders, viz. the Sanguineous and Exanguëous. The sanguineous he subdivides into viviparous, as the whale, the dolphin, the hippopotamus, &c. Oviparous, as the crocodile, &c. Cartilaginous, which last he again subdivides into viviparous and oviparous, spinous, broad, and oblong fishes; fishes which resemble serpents; and what he calls the lesser spinous, scaly fishes, which he distributes into pelagii, or fishes found only at great distances from the shores; littorales, or those which frequent the shores; saxatiles, or those which frequent rocks and stony places; and, lastly, the amnici and lacustres, or those found in rivers and lakes.

In the 1555, Belonius, or Belon of Maine, published another volume upon birds, which he arranges in the following manner:

Order I. Rapacious birds, both diurnal and nocturnal, as eagles, vultures, owls. II. Water-fowl, or those which are web-footed, and swim in water, as the swan, pelican, ducks, &c. III. Birds which frequent banks of rivers, and marshy places, and are not web-footed, as the crane, the heron, &c. IV. Land-fowl, which build their nests upon the ground, as partridges, &c. V. Birds which frequent almost every place, and which live upon different kinds of food, as crows, pies, parrots, woodpeckers, &c. VI. Small birds which build their nests in hedges and bushes: These are subdivided into insectivorous, granivorous, and such as feed indifferently either upon insects or grain.

The author discovers an extensive knowledge of his subject, and a tolerable taste in composition, which is more concise, less embarrassed

rafted with quotations, and the ideas are clearer and better arranged than in the writings of most of his cotemporaries. •

§ 8. OF RONDELETIUS.

IN the year 1554, Rondeletius, a professor of medicine at Montpellier, published a work, *De Piscibus*. The first four books are entirely occupied with the distinguishing characters of fishes. Those characters are taken from the external and internal figure of the parts; from the manners and dispositions; from the food, the places frequented by different kinds, and many other circumstances. He distributes all fishes into two orders, viz. I. Sanguineous. II. Exanguous. The fishes comprehended under the first order are subdivided into, 1. Broad, compressed, scaly fishes, as the *aurata*, *sparus*, &c. 2. Saxatiles. 3. Small fishes. 4. What the author calls the lizard-kind, as the *acus*, &c. 5. Round, uncompress'd, scaly fishes, as the *lupus*, *asellus*, &c. 6. Fishes still rounder than the former, of a reddish colour, and having a thick head, as the mullet, *milvus*, &c. 7. Plain fishes, not cartilaginous, as the *foal*, &c. 8. Plain cartilaginous fishes, as the *raia*, &c. 9. Long fishes, as the conger, &c. 10. Foreign fishes, as the *orbs*, &c. 11. Cetaceous fishes, as the whale, &c.—The second order, viz. the exanguous, he divides into, 1. Testaceous, or shell-fish, which consist either of one or a double shell. 2. *Turbinata* and *cochleæ*. 3. Insects and zoophytes.

Rondeletius was so fully convinced of the necessity of methodical arrangement, that he frequently mentions the impossibility of distinguishing one object from another, without having recourse to the va-

rious marks by which the productions of Nature are characterised *. The first fish he describes is the aurata ; but he anxiously guards his reader from imagining that he does so because the name of the animal begins with the letter A †. Rondeletius describes with accuracy and fidelity : His taste in composition is still more chaste than that of Belonius.

§ 9. OF SALVIANUS.

HIPPOLYTUS SALVIANUS, a professor of medicine at Rome, published, in the year 1557, a large folio volume, entitled, *Aquatilium Animalium Historia*. This book contains the description and history of about 100 fishes, with figures drawn from the life, and engraved on copperplate with surprising taste and elegance. As the author confined himself entirely to such fishes as he had seen and examined, it was unnecessary for him to discover any solicitude about systematic arrangement. His descriptions are minute and accurate ; but the reader is frequently embarrassed and interrupted with useless quotations from the antients.

§ 10.

* Quid enim esset aliud inter nos quam chaos quoddam et rerum omnium confusa congeries, nisi forma, colore, aliisque hujusmodi internoscerentur ? Quo pacto lapides, herbar, pisces, a sese discernentur, si per omnia similes sibi-ipsis essent ? Ne illa quidem linguarum confusio in Babel tantum unquam negotii exhibuit, quantum illa rerum omnium similitudo exhibuisset ! Rondelet. de pisc. lib. 2. p. 31.

† Nolim autem quemquam existimare, ideo nos Auratam primum depingere, quod ab A litera incipiat. Hunc enim ordinem per literarum clementiam, non minus in piscium quam in herbarum descriptionibus, vitiosum esse existimamus ; et hunc secutos iure quidem a Dioscoride reprehensos fuisse. Rondelet. de pisc. lib. 5. p. 113.

§ 10. OF ALDROVANDUS.

ULYSSES ALDROVANDUS practised as a physician at Bononia in Italy. He wrote a system of natural history consisting of 12 folio volumes. Several of them were published after his death, which happened about the end of the 16th century. This voluminous author was so sensible of the absurdity of attempting to communicate science without method, that he expresses a degree of indignation against many of his predecessors, who, for want of genius to discover even the most obvious relations of nature, had recourse to an alphabetical arrangement*.

Aldrovandus distributes the animal kingdom into six classes, viz. I. Quadrupeds. II. Serpents. III. Birds. IV. Fishes. V. Insects. VI. Exanguous animals, or animals with colourless blood.

I. QUADRUPEDS.

THESE he subdivides into three orders. 1. Whole-hoofed. 2. Cloven-hoofed. 3. Digitated or toed.

In the first order, viz. the whole-hoofed animals, he begins with the horse, because he is the most useful to mankind; then follow the ass, the mule, the unicorn, and the elephant.

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* Qui alphabeticum in scientiis ordinem secuti sunt, ut Paulus Ægineta, Avicenna, &c. semper mihi displicuerunt, quod, rerum species commiscentes, quæ similis naturæ sunt, ideoque conjungenda, distrahant; quæ vero plurimum a se mutuo discrepant, ideoque distinguenda, contra connectant, Naturæ ordinem turbant, scientiorumque methodum omnem invertant, ac confundant. Aldrov. Ornithol. p. 7.

The second order consists of the cow, bull, and ox; the urus, bonafus, buffalo, sheep-kind, goat-kind, rhinoceros, camel, camelpard, and few.

The third order is subdivided into viviparous and oviparous. The viviparous are again subdivided into feræ, or savage animals; semiferæ, or wild animals; and domestic animals. Under feræ are arranged, the lion, lynx, tiger, bear, wolf, &c. The semiferæ comprehend the fox, ape-kind, castor, &c. And under domestic are contained the dog and cat.—The oviparous, as the frog, the toad, lizards, &c. are placed last because of their stupidity and want of dignity.

II. SERPENTS.

They are divided into two orders: 1. Those who have no feet.
2. Those who have feet.

III. BIRDS.

THESE are arranged into three orders: 1. Rapacious. 2. Granivorous. 3. Aquatic birds, and those who frequent the shores.

The rapacious, or birds with crooked claws, and generally carnivorous, he subdivides into, 1. Diurnal, who seize their prey in the day, as the eagles, hawks, and falcons. And, 2. Nocturnal, who prey during the night, as the owl, the bat, &c. Here he subjoins the parrot tribe, on account of the general structure of their bodies, and because they eat flesh when in a domestic state.

The granivorous comprehends the peacock, turkey, pheasants, and partridges. Here he makes two subdivisions: 1. The baccivorous, or berry-eaters, as the thrush, the starling, &c. 2. The vermivorous, or insect-eaters, as the swallows, motacilla, &c. He subjoins a section upon singing birds, as the nightingale, lark, goldfinch, &c.

The aquatic birds are divided into, 1. Web-footed, as the swan, pelican, ducks, &c. 2. Littoral, or those which frequent shores, banks of rivers, and marshy places, as the stork, the cranes, the woodcock, &c.

IV. FISHES.

These our author arranges into six orders: 1. Saxatiles, or those which frequent stony places. 2. Littorales, or those found near the coasts. 3. Pelagii, or such as are only found at great distances from the shores. 4. Those which both frequent the sea and rivers. 5. River-fish. 6. Whales, or cetaceous fishes.

V. INSECTS.

This class consists of two orders: I. Terrestrial. II. Aquatic. The first order is divided into insects with feet, and insects without feet. The insects furnished with feet are again subdivided into, 1. Those with, and those without, wings. 2. Insects having elytra, or whose wings are sheathed in a crustaceous covering, as the beetles, &c. and insects which have no elytra. 3. Naked-winged insects, have either (1.) four membranaceous wings, as the bee, the wasp, &c. or, (2.) four farinaceous wings, as the butterflies, &c. 4. Two-winged insects, as the domestic fly, &c. Insects without wings are

divided into, 1. Those which have few feet, i. e., from 6 to 14, as the ant, the scorpion, &c. 2. Those which have many feet, as the millipes, &c.—There is no subdivision of the insects that want feet, as the earth worm, &c.

The second order, or aquatic insects, is likewise divided into those which have feet; as the *musca fluviatilis*, and those which have no feet, as the leech, &c.

VI. EKANGUEOUS.

These are divided into, 1. Soft, as the cuttle-fish, &c. 2. Crustaceous, as lobsters, crabs, &c. 3. Testaceous, or shell-fish. 4. Zoophyta, as the *pulmo marinus*, &c.

This distribution of animals, though inaccurate in many respects, is by no means contemptible. Aldrovandus's principles of arrangement are numerous; but they are frequently unphilosophical. For example, in the class of fishes, the principle of arrangement, instead of being derived from qualities peculiar to the animals themselves, is taken solely from the places which they most commonly frequent. What he sometimes calls dignity, sometimes utility, sometimes genius, or mental abilities, is another principle of division which he attempts to follow through all his classes. This often leads him into an unnecessary train of ridiculous argument, in settling the precedence of animals, whose history is still too little known to admit of such reasoning.

With regard to the execution of the work itself; the descriptions are in general good. The historical part is frequently debased with
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fable and credulity. The manner of writing is deeply marked with the false taste of the age in which the author lived ; and the whole is enormously swelled with long quotations from poets, grammarians, and commentators, and other superfluous matter.

§ II. OF JONSTON.

Dr John Jonston, a physician at Leszno in Poland, published a system of Natural History at Amsterdam, in the year 1657. This author's chief aim was, to give an abridgement of the voluminous works of Gesner and Aldrovandus : He has likewise added the American animals from Margraaf and Piso. He digests the whole into five general classes. I. Quadrupeds. II. Birds. III. Fishes. IV. Insects. V. Serpents. He first published the fishes, next the birds, then the quadrupeds, and, lastly, the insects and serpents.

The quadrupeds are arranged into the following orders : 1. Whole-hoofed. 2. Cloven-hoofed ; which last are subdivided into ruminating animals with, and without horns, and such as do not ruminate. 3. Digitated viviparous animals, which are either terrestrial or aquatic ; and digitated oviparous animals, which are either covered with shells, or have no shells.

There are two orders of birds : 1. Land-fowls. 2. Water-fowls. The first order is subdivided into carnivorous ; granivorous which do not sing ; granivorous singing birds ; insectivorous that do not sing ; and insectivorous singing birds. The second order is subdivided into web-footed aquatic birds, which feed upon fishes ; web-

scoted herbivorous birds; carnivorous, insectivorous, and herbivorous aquatic birds, with divided toes.

The class of fishes is subdivided into the following orders: 1. Pelagii. 2. Saxatiles. 3. Littorales marini. 4. Fishes which frequent both rivers and the sea. 5. Fishes which live only in rivers and lakes.

The orders of insects are, 1. Terrestrial insects furnished with wings and feet. 2. Terrestrial insects which have feet, but not wings. 3. Terrestrial insects without feet. 4. The exanguous, which are subdivided into soft, crustaceous, and testaceous. 5. Zoophytes.

The serpents are distinguished into terrestrial, aquatic, and dragons without and with wings.

Dr Jonston has considerable merit in abridging the enormous volumes of Aldrovandus and Gesner: His merit would have been still greater, if, instead of abridging, he had totally rejected the accounts of many fictitious animals described and painted by these authors.

§ 12. OF WILLOUGHBY.

FRANCIS WILLOUGHBY, Esq; was the only son of Sir Francis Willoughby of Middleton in the county of Warwick. His amiable character, both as a gentleman and scholar, may be seen in Mr Ray's preface to the translation of Willoughby's Ornithology, published in the year 1678. Mr Willoughby died in July 1672, when he

he was only in the 37th year of his age. After his death, Mr Ray having examined his manuscripts, found the quadrupeds, birds, fishes, and insects digested into a new method, but few of their descriptions and histories so perfect as the author had intended. Those defects, however, were afterwards supplied; at least with regard to the birds and fishes, and published by Mr Ray himself. The ornithology appeared in Latin in the year 1676, and the history of fishes in the 1686, each of them accompanied with copperplate figures of the different species.

The design of the author cannot be better represented than in the words of Mr Ray: 'As for the scope of this undertaking, it was neither the author's, nor is it my intention, to write pandects of birds, which should comprise whatever had been before written of them by others, whether true, false, or dubious, that having been abundantly performed by Gefner and Aldrovandus. But our main design was to illustrate the history of birds, which is in many particulars confused and obscure, by so accurately describing each kind, observing their characteristic and distinctive notes, and reducing all to their proper classes and genera, that the reader might be sure of our meaning, and, upon comparing any bird with our description, not fail of discerning whether it be the one described, or no *.'

But the justness of Mr Willoughby's ideas concerning the methodical distribution of animals will still further appear from the following sketch of his plan.

BIRDS.

* Preface to the translation of Willoughby's Ornithol.

BIRDS.

THESE our author comprehends under two general divisions, viz.
1. Land-fowl. 2. Water-fowl.

The land-fowl are distinguished into, 1. Birds with crooked bills and talons. 2. Birds with more straight bills and claws.

Those with crooked bills or talons are either, 1. Carnivorous and rapacious; or, 2. Frugivorous. 1. The carnivorous are subdivided into diurnal and nocturnal. The diurnal are again divided into the lesser, and the greater. The greater diurnal birds are still further divided into the more generous, called eagles; and the more cowardly and sluggish, called vultures. The lesser diurnal birds are in the same manner distinguished into the more generous, called hawks, and which are capable of being taught to fowl; and the more cowardly and sluggish, which, from their want of docility, are neglected by falconers. The generous are again distinguished into long-winged, as the falcon, lanner, &c.; and short-winged, as the goshawk and sparrow-hawk. The cowardly are divided into the greater, as the common buzzard, bald-buzzard, &c.; and the lesser, which is again divided into the European, as butcher-birds and shrikes; and the exotic, or birds of Paradise. The nocturnal are either horned, as the eagle-owl, horned-owl, &c.; or without horns, as the crown owl, gray owl, &c. 2. The Frugivorous are distinguished into the greatest kind, called macaws; the middle-sized, called parrots; and the least kind, called parroquets.

Birds with more straight bills and claws are divided into the great-

est, which, on account of the bulk of their bodies and smallness of their wings, cannot fly, as the ostrich, the cassiowary, and the dodo; the middle sized; and the least kind. The middle sized are divided into such as have large, thick, strong, and long bills; and such as have smaller and shorter bills. The large billed feed either promiscuously upon flesh, insects, and fruits, and those again are either wholly black, as the crow-kind, or party-coloured, as the pie-kind; upon fish, as the kings-fisher, or upon insects only, as the wood-peckers. The middle-sized are distinguished, by the colour of their flesh, into the white, as the poultry-kind; and the black, which are again split into the greater, as the pigeon-kind; and the lesser, as the thrush-kind. The least kind, called small birds, are distinguished into the soft-beaked, or those which have slender, straight, and generally pretty long bills, and feed upon insects; and the hard-beaked, or those which have thick and short bills, and feed mostly upon seeds.

Birds of the second division, water-fowl, are distinguished into, 1. Such as frequent waters and watery places, in quest of their food. 2. Such as swim in water.

Those that frequent watery places are divided into the greatest, as the crane, jabiru, &c.; and the lesser; which last is again distinguished into piscivorous, as the heron, spoon-bill, stork, &c.; and mudsuckers and insectivorous. The mudsuckers have very long bills, which are either crooked, as the curlew, whimbrell, &c. or straight, as the wood-cock, godwit, &c. middle-sized bills, as the sea-pie, redshank, &c. or short bills, as the lapwing and plover.

Those that swim in the water are divided into cloven-footed, as the coot, &c. or whole-footed. The whole-footed are
either

either long-legged, as the flamingo, the avocetta, &c. or short-legged, which last are subdivided into such as have three toes, as the penguin, the razor-bill, &c. and those with four toes. The four-toed are again distinguished into such as have all the four toes connected by membranes, as the pelican, the solan-geese, &c. and such as have the back-toe loose; and these last are subdivided into narrow-billed, and broad-billed. The narrow-billed are distinguished into such as have blunt bills, hooked at the point, which are either ferreted, as the diver, or not toothed, as the puffin, &c.; and such as have sharp-pointed and straighter bills, which again are either short-winged and divers, called duckers; or long-winged, and much upon the wing, called gulls. The broad-billed are divided into the goose-kind, which are larger; and the duck-kind, which are lesser; and these last are either sea-ducks, that dive much; or river and plain-ducks.

FISHES.

Order I. Cetaceous fishes, or those which have lungs, are viviparous, and suckle their young, as the whale, the dolphin, the porpoise, &c.

Order II. Cartilaginous fishes, which are viviparous, have no scales, and, in place of gills, have on each side five oblong holes; have cartilages instead of bones; and the males have two appendages connected with the anal fins, which are thought to be mentulæ.

The second order, viz. The cartilaginous fishes, are divided into the proper, and less proper.

The

The proper are subdivided into long and cylindrical, and broad and plain fishes. The long cylindrical are distinguished into such as have longer, and such as have shorter snouts: Those with longer snouts are divided into such as have teeth, and are either destitute of prickles, as the white shark, the blue shark, the sea-fox, the balance-fish, &c.; or furnished with prickles, as the hound-fish, &c.; and such as have no teeth, as the smooth hound-fish, &c.: Those with shorter snouts, as the bounce, &c. are not subdivided. The broad and plain fishes are subdivided into those with thinner tails, and those with thicker tails. The thinner-tailed are either furnished with a spinous ray, as some of the sea-eagles, &c. or with many prickles, which last are again divided into those that are rough, as the white-horse, thorn-back, &c.; and those which are smooth, as the skate-fish, &c.

The less proper cartilaginous fishes have cartilage in place of bone; are oviparous, and furnished with gills, but have no mentulae; as the frog-fish, &c.

Order III. Spinous oviparous fishes, or those which, for the most part, have prickles adhering to their bodies.

This order is divided into,

1. Plain spinous fishes, which project themselves on their sides when swimming, and are either shorter and more square, as the turbot, or longer, as the sole, &c.

2. Eel-shaped fishes, as the conger, the sea-serpent, &c.

3. Fishes with more contracted bodies, and which have no belly-fins, as the orb, the sun-fish, &c.

4. Fishes with soft and flexible rays in the back fins, which are divided into such as have three back-fins, as the cod-fish, the whiting, &c.; such as have two back-fins, as the ling, the tunny-fish, the mackerel, &c.; such as have but one back-fin, and inhabit the sea, as the herring, the pilchards, &c.; and such as have but one back-fin, inhabit rivers, and want teeth, as the carp, the bream, &c.

5. Fishes having some rays in the back-fins furnished with sharp prickles: These are subdivided into such as have two back-fins, the anterior of which has prickly rays, as the perch, the flying fish, &c.; and such as have one back-fin, with the anterior rays prickly and the posterior ones soft, as the sea-perch, the stickleback, &c.

Mr Willoughby's descriptions are scrupulously accurate and minute. Besides, where any difficulties occur in distinguishing one species from another, he generally subjoins a few short marks, the more easily to ascertain their differences. The historical part is conducted with great candour and modesty, no facts being admitted but such as either consisted with the author's knowledge, or were sufficiently attested by men of learning and credit.

§ 13. OF RAY.

It is an unfortunate circumstance, that men whose inclinations lead them to the cultivation of science are so seldom endowed with those nicer feelings which are necessary to the formation of taste. A few individuals, impelled by constitutional inclination, by accident,

or

or by necessity, apply the whole force of their minds to particular subjects. By this means new facts, and sometimes new principles, are discovered. But these are too often ushered into the world in such a cold and forbidding manner, that, instead of attracting general attention, they are only perused by men of similar tempers, who are equally ill qualified to recommend them. Natural history, a science replete with variety, regularity, utility, and every species of beauty which can gratify the human intellect, laboured long under the oppression of phlegmatic writers. During this period, the oeconomy of nature was almost entirely overlooked. Even those who discovered a fondness for natural knowledge, instead of meeting with applause, were often despised and ridiculed. And, indeed, while naturalists continued to be only mere collectors of gnats and butterflies, they perhaps deserved no better treatment.

In order to propagate a taste for any science, no other requisite is necessary than a good writer to represent it in proper colours. Natural history, towards the end of last century, was powerfully recommended to the attention of mankind by the labours of our illustrious countryman, the Reverend Mr John Ray; a man so remarkable for solidity of learning and correctness of taste, that, from perusing his valuable works, it is difficult to discover which of these respectable qualities shone most conspicuously in his character. Before this worthy author's time, although, as we have seen, several laudable attempts were made to reduce the subjects of natural history to a kind of methodical arrangement, none of their authors seem to have had such comprehensive views of nature as to enable them to form a system founded upon solid principles. But as the character of Mr Ray and of his writings are so universally known and admired, it would be superfluous to say any more on that subject.

We therefore proceed to give a short view of the author's methodical distribution of animals.

Mr. Ray, in the year 1693, published his *Synopsis of Quadrupeds and Serpents*. His *History of Insects* was published in the year 1710, by order of the Royal Society; and his *Synopsis of Birds and Fishes* in the 1713, under the inspection of Mr. Derham; both these last were printed several years after the author's death.

In the synopsis of quadrupeds, Mr. Ray lays down a general division of the animal kingdom, which he comprehends under two great classes, viz. 1. The sanguineous. 2. The exangueous.

The sanguineous are subdivided into those which respire by lungs, and whose hearts are furnished with two ventricles; and those which respire by gills, as all the sanguineous fishes, except the cetaceous tribe. But some animals have two lungs, as the cetaceous fishes, viviparous quadrupeds, and birds; and others only one, as the oviparous quadrupeds and serpents. Animals with two lungs are either viviparous or oviparous. The viviparous are subdivided into aquatic, as the cetaceous fishes; and terrestrial, as the quadrupeds covered with hair. The oviparous animals with two lungs comprehend the whole class of birds.

The exangueous are divided into the larger, which are either soft, as the cuttle-fish, &c. Cruftaceous, as the lobster, &c. or testaceous, which again are either furnished with one valve, two valves, or one turbinated; and the lesser, which include insects properly so called.

QUADRUPEDS.

QUADRUPEDS.

Mr Ray divides viviparous quadrupeds into two orders, viz. I. Such as are hoofed. II. Such as have nails or claws.

The first order is subdivided into, 1. Whole-hoofed, as the horse, ass, and zebra. 2. Cloven-hoofed, which either ruminate, as the sheep-kind, &c. or do not ruminate, as the hog-kind. The ruminating animals are again distinguished into two kinds, viz. Such as do not cast their horns, as sheep, goats, &c. and such as do cast their horns, as the deer-kind. 3. Four-hoofed, as the rhinoceros, hippopotamus, &c.

The second order, comprehending animals with nails or claws, are distinguished, by the number of toes and nails or divisions in their feet, into bifid, or those furnished only with two toes or nails, as the camel-kind; and multifid, or such as have more than two: The last are subdivided into such as have undivided toes, or toes adhering to one another, and covered with a common skin, their extremities only standing out, and fortified with obtuse nails, as the elephant; and such as have divided toes: Quadrupeds with divided toes have either broad nails like those of men, as the ape-kind; or narrower claws, with cutting teeth in each jaw: These are again distinguished into such as have many cutting teeth; and such as have only two. Those with many cutting teeth are all carnivorous and rapacious, or at least feed upon insects, or promiscuously on insects and vegetables, and are divided into the greater kind, furnished with a snout, which is either roundish, as in the cat-kind, or longer, as in the dog-kind; and the lesser kind, with long slender bodies and short

short legs, as the weasel, otter, &c. Those with two cutting teeth, are all herbivorous, as the hare-kind. The hedge-hog, armadillo, mole, shrew-mouse, ant-eater, bat, and sloth are added here as anomalous.

The oviparous quadrupeds respire by lungs, and have but one ventricle in their hearts. Under this division are comprehended frogs, tortoises, lizards, and serpents. The serpents are distinguished into those which have long, crooked, sharp, exerted teeth, by which they bite and infuse a venom into the wound, as the viper, the rattlesnake, &c.; and those which have no such teeth, and are not venomous, as the common snake, &c.

BIRDS AND FISHES.

In these two classes, the divisions and principles of arrangement are so nearly the same with those of Mr Willoughby, that it would be superfluous to repeat them.

INSECTS.

Mr Ray, from the transformation of many insects, comprehends the whole under the two following divisions: I. Insects which undergo no change from their original state. II. Insects which suffer a transformation.

The first division is distinguished into those which have no feet; and those which have feet. Insects without feet are again either terrestrial or aquatic. The land-insects either live in the ground, as the earth-worms, or in the intestines of men and other animals, as the

the ~~terreſtes~~, tania, and aſcarides. The aquatic infects are divided into the greater, as loechæa, &c. ; and the leſſer, as the ſmall worms called flukes, &c. Infects with feet are diſtinguiſhed into ſuch as have 6 feet ; ſuch as have 8 feet ; ſuch as have 14 feet, as the woodlice, &c. ; and ſuch as have many feet. The 6-footed infects are divided into terreſtrial and aquatic. The terreſtrial are either larger, as meal-worms, &c. ; or leſſer, as the bug, the common louse, &c. The 8-footed infects are either furniſhed with a tail, as the ſcorpion, or have no tail, as ſpiders, mites, &c. The many-footed infects are likewiſe divided into terreſtrial, and cylindrical, as the julus ; terreſtrial plain or compreſſed, as the ſcolopendræ ; and aquatic, as the lugs or ſea-bait, &c.

In the ſecond diviſion, comprehending infects which ſuffer a transformation, Mr Ray follows Swammerdam's method, who diſtinguiſhes them by the circumſtances attending their different changes. The firſt ſpecies of transformation is performed ſo ſuddenly, that hardly any time intervenes between the two different ſtates or forms of the animals, as in the dragon-flies, graſhoppers, crickets, &c. The ſecond ſpecies of transformation comprehends thoſe infects which undergo a double metamorphoſis, being firſt changed to a chryſalis, remaining for ſome time without motion and without taking any nourishment, and then to a fly. Theſe are diſtinguiſhed, by their wings, into coleoptera, or thoſe which have cruſtaceous ſheaths covering their wings, as the beetles ; and anelytra, or thoſe which have no ſuch covering to their wings ; which laſt are ſubdivided into ſuch as have farinaceous wings, as the butterflies ; ſuch as have four membranaceous wings, as bees, &c. ; and ſuch as have two membranaceous wings, as the fleſh-fly, &c.

The third species of transformation is simply from a caterpillar to a fly, the caterpillar lying quiet for some time before its change, and comprehends several kinds of muscæ.

N. B. This history and distribution of insects was left in a crude state, and never finished for the press by the author.

The different synopses of animals written by Mr Ray are not to be considered as mere technical distributions. His arrangements indeed are founded on good principles; and his descriptions are short, but clear and comprehensive. However, besides arrangement and description, the author, particularly in his synopsis of quadrupeds, frequently subjoins a concise history of manners and dispositions. In the arrangement and descriptions, extensive erudition and a sound understanding, joined to a habit of accurate observation, are eminently conspicuous. In the history of individuals, Mr Ray discovers an elegance of taste, a scrupulous regard to truth, a manly philosophical firmness, and, above all, a warm attachment to virtue and the genuine happiness of mankind.

§ 14. OF ARTEDI.

PETRUS ARTEDI, a native of Sweden, and fellow student of Linnæus, with whom he lived in habits of the most intimate friendship, died at an early period of life, having fallen into a canal near Amsterdam, where he unfortunately perished in the 30th year of his age. Natural history was the subject in which he chiefly delighted; but he applied himself particularly to ichthyology, a branch of that science which had been least cultivated. After examining with the minutest

misapprehension all the fishes produced in his own country, Artedi travelled into Holland, Britain, &c. with a view to improve himself still further in his favourite study. Not satisfied with the arrangement of Willoughby and Ray, he composed a system founded upon different principles. After the death of Artedi, Linnaeus procured his manuscripts, and published his method and description of fishes at Leyden in the year 1738.

Artedi distributes fishes into those which have perpendicular tails, with rays in their fins; and those which have horizontal tails. Those with perpendicular tails are divided into bony fishes, and cartilaginous fishes. The bony fishes constitute three orders: 1. Malacopterygii, or fishes with small bones in their gills, and soft rays in their fins, as the carp, the bream, the herring, &c. 2. Acanthopterygii, or fishes with small bones in their gills, and pungent or prickly rays in their fins, as the mullet, the mackerel, the stickleback, &c. 3. Branchiostegi, or fishes which have no bones in their gills, as the sun-fish, the frog-fish, &c. There is but one order of the cartilaginous fishes, viz. the chondropterygii, or fishes the rays of whose fins are hardly distinguishable from the membrane; they have cartilages in place of bones, and their mouths are generally situated in the under part of their bodies, as the lamprey, the balance-fish, the skate, the shark, &c. The fishes with horizontal tails likewise constitute but one order, viz. the plagiuri, which comprehends the whale-kind.

The descriptions of Artedi are fuller and more scientific than those of most ichthyologists. He has likewise added a multitude of synonyms.

§ 15. OF KLEIN.

Mr KLEIN, an ingenious methodist, published a new arrangement of fishes in the year 1740. Since that time, he has favoured the world with a methodical distribution of quadrupeds, birds, testaceous animals, and reptiles, &c.

QUADRUPEDS.

These Mr Klein divides into the three following orders. I. Hoofed quadrupeds. II. Toed and hairy quadrupeds. III. Toed quadrupeds without hair.

The first order he subdivides into five families. 1. Quadrupeds with one hoof, as the horse and ass. 2. With double or cloven hoofs, as the ox-kind, the sheep-kind, &c. 3. With three hoofs, as the rhinoceros. 4. With four hoofs, as the hippopotamus. 5. With five hoofs, as the elephant.

The second order comprehends viviparous quadrupeds furnished with toes, and covered more or less with hair. These are likewise subdivided into five families. 1. Quadrupeds with two toes, as the camel and filenus. 2. With three toes, at least uniformly in the fore-feet, as the sloth and ant-eater. 3. With four, uniformly in the fore-feet, as the armadillo, &c. 4. With five toes, uniformly in the fore-feet, as the hare, the squirrel, &c. 5. With anomalous feet, as the otter, castor, walrus, phoca, and manati.

The third order comprehends, 1. Quadrupeds covered with a shell,

shell, as the tortoises. 2. Quadrupeds covered with a hard cataphractic substance, as the crocodile. 3. Naked quadrupeds, as lizards, frogs, &c.

BIRDS.

Mr Klein divides birds into eight families. His principle of arrangement is solely derived from the number, situation, and structure of the toes.

Order I. Birds with two toes, both placed forward, as in the ostrich.

II. — With three unconnected toes, all placed forward, as the cassiowary, the bustard, the green plover, &c.

III. — With four toes, two before and two behind, as the parrots, woodpecker, cuckoo, &c.

IV. — With four toes, three before and one behind, as the eagle, vulture, hawk, owl, crow, pie, bird of paradise, lark, nightingale; the wren, the swallow, the linnet, the woodcock, the humming birds, the curlew, the gallinaceous tribe, the columbine tribe, the crane, &c.—A strange, unnatural combination!

V. — With four toes, three before, connected by a membrane, the back-toe loose, as swans, geese, gulls, divers, &c.

VI. — With four toes, all connected by a membrane, as the solenogose, cormorant, &c.

VII. — With three toes placed forward, all connected by a membrane, as the guillemot, penguin, albatross, &c.

VIII. — With four toes, having lobes, or loose membranes, adhering to the three fore-toes, and the back one generally without any lobe, as the crested loon, the coot, &c.

FISHES.

These are divided into three orders. The first comprehends such as respire by lungs, as the cetaceous tribe. The second order contains those fishes which respire by occult gills, or gills which do not appear externally : Fishes of this kind are furnished with spiracles or small holes, in some placed behind, in others laterally, and in others, in the thorax. The subdivisions of this order are regulated by the number of these spiracles. The third order includes such fishes as have visible gills. Any thing remarkable in the head, mouth, and form of the body is employed for the subdivisions of this order.

TESTACEA, OR SHELL ANIMALS.

Mr Klein makes two general divisions of shell-animals, the first of which he calls cochlides, and the second conchæ. The cochlides have testaceous spiral canals, small and close at one end, the spires gradually enlarging in a uniform proportion, till they terminate in the mouth of the shell. The conchæ are concave scouped shells, such as limpets, muscles, &c.

The cochlides are divided into simple and compound. The simple cochlides are spiral canals formed by a single revolution of the

shell, and are distributed into eight classes, viz. 1. Plain, as the nautilus, cornu ammonis, &c. 2. Convex, as the nerita, luna, &c. 3. Vaulted, as the pentadactylus, &c. 4. Elliptical, as the ear-shell, &c. 5. Conical, as the Strombus, &c. 6. Cochlea, or simple cochlides similar to obtuse and somewhat inclined cones, as the fornax, faccus, &c. 7. Buccinum, as the whelks and trumpet-shells. 8. Turbo, wreath or whirl-shells.—The compound cochlides are such shells as have a double circumvolution, so that they appear to be composed of two. These are divided into five classes. 1. Rostrata, or beaked shells, as the gladius, &c. 2. Shells with a long volute, as the turricula, &c. 3. Shells with an oval volute, as the bulla, cithara, &c. 4. Alata, or winged shells, as the harpago, &c. 5. Murex, caltrop or rock-shells, as the triangular whelk, &c.

The conchæ are divided into six classes. 1. Monoconcha, or single-valved shells, as the limpets. 2. Diconcha, or two-valved shells, are subdivided into equal and connivex, as oysters, muscles, &c.; equal and interrupted, as the chama, &c.; and unequal, as the terebratula, &c. 3. Polyconcha, or shells with more valves than two, as the anatifera or barnacle. 4. Niduli testacei, acorn-shells, or collections of shells in the form of little roundish nests, either solitary or adhering to other sea-bodies, as the balanus, &c. 5. Echini marini, or sea-urchins. 6. Tubuli marini, or sea-tubes.

REPTILES.

These are divided into two orders. I. Anguis, comprehending the serpent tribe. II. Worms.

The first order is subdivided into, 1. Serpents with distinct heads
and

and tapering tails : These are again distinguished into such as have canine teeth, as the vipers ; such as have pectinated teeth, like the pike-fish, as the ammodites, &c. ; such as have teeth resembling needles, as the coluber dipsas, aesculapius, &c. ; and such as have no teeth, as the terpens ceraftes of Seba, &c. 2. Serpents with undistinct heads, and truncated tails, as the amphibæna and scytale.

The second order, viz. worms, are all included under three genera ;
 1. Lumbricus, comprehending earth-worms, water-worms, and such as inhabit the bodies of animals. 2. Tænia, or the tape-worm. 3. Hirudo, or leech.

Mr Klein's method is ingenious ; but his principles of arrangement are so limited, that very incongruous animals are often linked together.

§ 16. OF LINNAEUS.

THIS learned and indefatigable naturalist appeared in the character of a systematic writer as early as the year 1735. After that period, he gradually improved and enriched his *Systema Naturæ* till the last edition of that valuable work, which he published at Holme in the year 1766 7. Since his death, however, Professor Gmelin of Goettingen, with much industry and knowledge, published an improved edition, being the 13th, at Leipzig, in the year 1788. As twenty years had elapsed since the 12th edition was presented to the public by the celebrated Linnaeus, many discoveries in the animal kingdom had been made, in different quarters of the globe, by laborious and ingenious travellers. These Professor Gmelin has not only collected and described, but has incorporated them

into his edition of the *Systema Naturae* of Linnaeus, by which, without materially altering the plan and arrangement, he has highly enriched and enhanced the value and utility of the work.

Linnaeus* distributes the animal kingdom into six Classes: I. Mammalia, or animals that suckle their young, which includes man, the quadrupeds, and the whale-kind. II. Birds III. Amphibious animals. IV. Fishes. V. Insects. VI. Worms.

CLASS I. MAMMALIA.

I. The mammalia are divided into seven orders. The orders of the mammalia are chiefly regulated by the number and situation of the teeth. 1. *Primates*, or animals with one canine and four cutting teeth. This order includes man, and all the ape, monkey, and bat-kinds, 2. *Bruta*, or animals which have no cutting teeth in either jaw, as the elephant, ant-eater, &c. 3. *Ferae*, or animals whose cutting teeth vary from ten to two. This order comprehends most of the rapacious quadrupeds, as the dog, cat, and bear-kinds, &c. 4. *Glires*, or animals which have only two cutting and no dog-teeth, as the mouse, squirrel, hare, &c. 5. *Pecora*, or animals which are hoofed, and have no cutting teeth in the upper jaw. This order includes the camel, the deer, the sheep, and the ox-kinds, &c. 6. *Belluae*, or quadrupeds with cutting teeth in each jaw; as the horse, the fow, &c. 7. *Cetæ*, or animals, whose teeth vary greatly in different genera. This order comprehends all the cetaceous, or whale tribes, which Linnaeus, from certain similarities of structure, has arranged under the class of quadrupeds.

CLASS II. BIRDS.

This class Linnaeus divides into six orders. The distinctive characters of the orders are chiefly derived from the bills and the feet.

- I. *Accipitres*, (eagle or hawk kind) birds with hooked bills, and short, robust limbs. Under this order are comprehended vultures, falcons, owls, &c. They build their nests in rocks, and elevated situations.
- II. *Picae*, (pies) or birds with bills shaped like a knife and convex on the backs. The limbs are fitted for walking, being short and pretty strong. They build their nests in trees.
- III. *Anseres* (ducks) have smooth bills, covered with a skin, and expanded at their termination. Their toes are connected by a membrane, which enables them to swim. They generally build their nests on the ground.
- IV. *Grallae*, or birds with obtuse and nearly cylindrical bills. The limbs are fitted for walking, and the thighs are partly destitute of feathers. They generally build their nests on the ground. To this order belong cranes, snipes, &c.
- V. *Gallinae*, or birds with convex bills. The toes are divided, but strongly connected above by articulations, and fitted for walking or running. This order comprehends the pheasant, grouse, peacock, &c. kinds.
- VI. *Passeres*, or birds with conical sharp-pointed bills. To this order belong the pigeon, the swallow, the thrush, &c. kinds.

CLASS III. AMPHIBIOUS ANIMALS.

This class comprehends all those animals which, from certain peculiarities in the structure of their lungs, are enabled to live either in air or in water. Linnaeus divides this class into two orders. I.

Reptilia

Reptilia pedata, or reptiles furnished with feet, including turtles, lizards, frogs, &c. II. *Serpentes apodes*, or reptiles without feet. This order comprehends all the serpent and snake kinds.

CLASS IV. FISHES.

In the class of fishes, which Linnaeus divides into six orders, the principal marks of distinction are derived from peculiar circumstances attending the gills and fins. The first four orders comprehend all those fishes which have osseous gills; and this fact must be understood as applicable to the other characters the author employs to distinguish these orders.

Order I. *Apodes*, or fishes which have no ventral, or belly fins. This order comprehends all the eel tribes, whether they inhabit seas, lakes, or rivers. 2. *Jugulares*, or fishes with the ventral placed before the pectoral fins, as in the haddock, whiting, ling, &c. kinds. 3. *Thoracici*, or fishes with the ventral situated near the pectoral fins, as in the feather-lasher, holibut, plaife, &c. 4. *Abdominales*, or fishes with the ventral situated behind the pectoral fins, as the pike, the mullet, the herring, &c. 5. *Branchiostegi*, or fishes whose gills are destitute of osseous matter, as the sun-fish, pike-fish, frog-fish, &c. 6. *Ctenodopterygii*, or fishes with cartilaginous gills, as the sturgeon, dog-fish, balance-fish, &c.

CLASS V. INSECTS.

Under this class Linnaeus comprehends all animals which are
 VOL. II. H provided

provided with *antennae*, or feelers, situated in the fore-part of their heads. The orders of insects, which are seven in number, are chiefly derived from their wings. They are distinguished into those which have four, those which have two, and those which are destitute of wings. To the first order Linnaeus gives the appellation of *coleoptera*, or four winged insects whose upper pair consist of a crustaceous or horny substance, and join in a suture or ridge. These cover and defend the under pair, which are of a soft and flexible texture. This order includes the whole *scarabaei* or beetle tribe.

2. *Hemiptera*, insects which have likewise four wings; but the upper pair, instead of being hard and horny, have a resemblance to fine vellum, as in *grasshoppers*, *locusts*, *crickets*, &c. 3. *Lepidoptera*, or insects whose wings are covered with imbricated scales. This order comprehends all the *butterfly* and *moth* tribes.

4. *Neuroptera*, or insects with four membranaceous wings, so interspersed with delicate veins, that they resemble beautiful net-work, as the *dragon-fly*, the *spring-fly*, &c. 5. *Hymenoptera*, or insects with four membranaceous and naked wings, as the *wasp*, the *bee*, &c. In some of the genera, however, arranged under this order, the neuters, and, in others, the males, or even the females, have no wings. Their tails, except in the male sex, are armed with a sting.

6. *Diptera*, or two winged insects. Beside wings, the species of this order are furnished with what is called a *halter*, or a *poiser*, which is situated under each wing, and terminates in a *capitulum*, or knob. Under this division are comprehended the *gad-fly*, the *gnat*, &c.

7. *Aptera*, or insects which are destitute of wings, as the *louse*, the *flea*, the *scorpion*, &c. VI. *Vermes*, or *worms*. This order includes not only all the insects commonly called *worms*, but all the testaceous animals, and the zoophytes, or plant-animals.

§ 17. OF BUFFON.

I. OF QUADRUPEDS.

THE first volume of the *Histoire Naturelle, generale et particuliere, avec la Description du Cabinet du Roi*, was published at Paris in the year 1749. The historical part is the composition of M. de Buffon; the descriptive and anatomical parts are written by M. Daubenton. To avoid, however, the frequent repetition of two names, we shall use that of Buffon only.

We found not much difficulty in giving short views of the ~~ing~~ of those naturalists who preceded the celebrated author now before us. If we may judge of the character of a man from his literary performances, M. de Buffon, when tried by this test, appears in such a variety of agreeable and brilliant aspects, that, unless he be surveyed with uncommon coolness and attention, the imagination of the reader will be hurried away by an almost irresistible torrent of eloquence. Conscious of the strength of his own genius, he disdains the fetters and dull formalities of methodical distribution, which men of less fancy, but perhaps of superior judgement, have uniformly regarded as an essential article in the communication of science. To give some idea of our author's fertility and copiousness, it shall only be mentioned, that his history of quadrupeds alone consists of 15 large volumes in 4to. But when the multiplicity of subjects which he embraces are attended to; when we find him employing a whole volume on the method of studying natural history, and on the theory of the earth; another in order to support a peculiar theory of ge-

neration ; a third in describing the articles contained in the cabinet of the king, and the various races of men ; a long discourse on the nature of animals, another reprobating methodical arrangements ; and, above all, when it is considered that the author was a most eloquent and ingenious Frenchman, we have reason to be surprised that he should have begun the history of his first quadruped so early as in the middle of the fourth volume.

The design of the present chapter obliges us to confine our observations chiefly to that part of M. de Buffon's work which contains the principles upon which he thinks natural history ought to be taught and studied.

M. de Buffon asserts *, that all methodical distributions are purely arbitrary ; and, therefore, that every man is at liberty to chuse that which is most convenient, or most generally received. Let us suppose a man, he remarks, totally void of ideas, and consequently unbiassed by prejudices of every kind. Place this man in a country stored with quadrupeds, birds, fishes, and plants. At first he will not be able to distinguish one object from another ; but, allow his ideas to be gradually unfolded by reiterated impressions from the same objects, and he will soon be in a capacity to distinguish animated from inanimated matter ; in a short time afterward, he will likewise perceive the difference between animal and vegetable substances, and thus naturally arrive at the first great division of natural bodies into Animal, Vegetable, and Mineral. As by this time he will have acquired distinct ideas of those grand objects, Earth, Air, and Water, he will soon form a particular notion of such animals as inhabit these different elements, and, of course, will easily make a second

* Hist. Nat. tom. 1. p. 31. et seq. 4to. a Paris, 1749-1772.

cond division of animals into quadrupeds, birds, fishes, &c. Let us next suppose, continues our author, that this man has acquired an equal portion of knowledge and experience with ourselves, and he will form a judgment of the objects of natural history solely by the relations which they respectively have to himself. Those which are most necessary or useful to him will occupy the first rank; for example, in arranging quadrupeds, he will give the preference to the horse, the dog, the ox, &c. Those which inhabit the same country, as the stag, the hare, and, in general, all the wild or undomesticated animals, will be the next in order: Lastly, his curiosity will prompt him to inquire into the nature of such animals as inhabit foreign climates, and will proceed in the same manner with regard to birds, fishes, insects, testaceous animals, plants, minerals, and every other production of nature. This our ingenious author supposes to be the most natural order, and, accordingly, observes it in his history of animals. We shall mention his arrangement of quadrupeds in a more simple form from the 168th page of the 4th volume—
I. Domestic quadrupeds. II. Wild quadrupeds. III. Foreign quadrupeds.

We should be apt to imagine that M. de Buffon, when he laid down this principle of arranging animals, had not only been mistaken in his philosophy, but had forgotten the subject upon which he was writing: That young and uninformed minds gradually acquire additions to their stock of ideas from the objects which surround them and solicit their attention, or, in other words, that objects, in proportion to the novelty of their appearance, and the utility they promise to afford us, make the deepest impressions on our minds, and, of course, their properties are not only first attended to, but more minutely investigated than those which are either more distant

distant or less interesting, is a fact that cannot admit of a doubt. But the observation, however just, is here misapplied. If we did not know that M. de Buffon was endeavouring to ascertain the principles of arranging the animal world, we should be led to think that he was tracing the manner in which ideas were acquired, and the proportional force of the impressions we receive from external objects. But, who would not be astonished to see this fact applied to a science of an opposite nature, and constructed upon very different principles? There are many other relations by which mankind are connected to the animate and inanimate productions of Nature than what arise from utility and local situation. Besides, the principle is extremely limited and defective. The connection of mankind with natural objects is, in many cases, entirely casual, depending on the climate, the state of the society in which he lives, with regard to culture, institutions, prejudices, and a thousand fortuitous circumstances. Again, are there no natural relations between the various tribes of brute animals? Are they all related to man, without any connection among themselves? Have they no common properties in the form of their bodies, their movements, or in the internal powers by which their actions are governed? M. de Buffon will not go so far; and yet he makes very near approaches. ‘An ass,’ says he, ‘is an ass, and a cat, a cat *.’ ‘Nature,’ he remarks, in another place †, ‘proceeds from one species to another by such imperceptible degrees, that we are often tempted to link many of them together as belonging to the same family. We ought not, however, to forget, that these families, or genera, are created by ourselves, in order to assist the understanding; and that, if we cannot comprehend the real connections of natural objects, it is our own fault, and

* L’Hist. Nat. vol. I. p. 46.

† Ibid. vol. 4. p. 384. et seq.

‘ and no defect in Nature, who knows nothing of those pretended families, and who, in fact, has only made individuals. An individual is a detached being, which has nothing in common with other beings, except that it resembles, or rather differs from them. All the similar individuals which exist upon this earth are considered as composing the species of these individuals. It is not, however, the collective number of individuals, but their constant succession and renovation, which constitute their species.’

In this and many other passages, Mr. de Buffon endeavours to persuade us, that no such thing as genus exists in Nature, but that all her productions are unconnected species, or mere collections of successive individuals. He allows, indeed, that the connections or differences of many species are often so imperceptible, that we are in danger of concluding them to be of the same family. This admission is sufficient. It relinquishes the very point for which he so strenuously contends; a circumstance by no means uncommon in the works of this most ingenious, but versatile author. If Nature has made the connections of different species so strong that it requires considerable attention to discover their differences, it cannot be supposed that she had no design in this plan of operation. Her benevolent intentions, on the contrary, are numerous. The intimate connections and nice distinctions of natural objects give rise to an immense variety of beings, which could not possibly exist, if the gradations were larger and the distinctions more apparent. They assist the mind in forming general and comprehensive views of the universe. They are the foundation upon which every art and science is constructed, as, without their assistance, no man could form an abstract or general idea; it is needless to say more. We should, indeed, have considered it superfluous to have reasoned with

How easily do mankind deceive themselves, and how naturally does this deceit lead them into contradiction and absurdity? M. de Buffon, in the 26th page of his first volume, justly reprehends Aldrovandus for intolerable prolixity; and tells us, that his history might be reduced to one-sixth of its present size, if the immense load of useless and foreign matters were removed. But, the ingenious Frenchman had not the most distant idea, when he made this pertinent remark, that he was writing a severe satire on his own book, which had, by that time, swelled to eighteen large volumes in quarto, besides his history of birds, which consists of nine volumes more; and, if he had fortunately lived to complete his plan, the work would have been a much more ponderous load than that of the voluminous German.

We shall dismiss this learned and laborious composition, with a few observations on the descriptive part; for which we are indebted to the skill and indefatigable industry of M. Daubenton. The descriptions are generally taken from the life, and with such astonishing minuteness, that it is not without reluctance we are obliged to think a great part of this labour useless. Our author's plan of describing is so extensive, that every minute part of the body, whether external or internal, is not only fully described, but its length, breadth, and thickness, are accurately measured. He takes an individual of a species, and, after a general description, he proceeds to a mensuration of the particular parts, as the length of the head; the contour of the mouth; the distance between the angles of the under jaw; the distance between the nostrils; the length of the eye from one angle to the other; the distance between the two pupils; the distance between the ears, &c. He is equally minute in the dimensions

mentions of the different bones of the skeleton, and of the heart, lungs, stomach, and other intestines.

The general dimensions are necessary; as, without these, a distinct idea of the animal could not be conveyed. But exact measurements of every minute part of which the different members of the body are composed, render the description not only tedious and perplexed, but swell the book to an enormous size. Besides, the dimensions will not correspond with those of any other individual of the same species. Describe and measure a man, or any other animal, in this manner, and you may travel from the one pole to the other without finding another individual to whom these dimensions will exactly apply.

II. OF BIRDS.

EVERY admirer of the productions of nature must congratulate himself that the life of the great, the ingenious, and the laborious M. de Buffon was continued till he had been enabled to complete his Natural History of Quadrupeds, as well as that of the feathered tribes.

In this last department of Natural History, he had a thousand difficulties to encounter; particularly in describing and distinguishing the smaller species of birds, who not unfrequently intermix, and produce numerous fertile varieties. For this reason, in his plan of the work, he remarks that, instead of describing birds by distinct and separate species, he has united several of them under the same species. By this method, he has considerably abridged the Natural History of Birds; which, upon a more extensive scale, would have been too

with a philosopher who denies the existence of genus in the universe, had his knowledge and taste been as capricious as his scientific principles.

For what purpose, then, it may be asked, has M. de Buffon given himself the trouble of writing, and his readers the labour of perusing so much argumentation upon a subject so obvious? To ridicule all preceding and cotemporary writers who have observed method in their works, and persuade mankind that Nature prefers confusion to order! M. de Buffon, however, is so very unstable, that he seldom long preserves his poise. In the passage formerly quoted, he denies the existence of genera. But we must suppose him to have entirely overlooked what he had said in the 140th page of the same volume. Let us attend to his sentiments at that time. 'We have already,' says he, 'many connected facts and observations with regard to the different species of animals, which are employed as distinguishing characters in the various methodical distributions. In these methods we find an uniform description of the same parts in each different animal. This is so conformable to our plan, that we shall have recourse to those descriptions in treating of such foreign animals as we have never seen. There is still another advantage to be derived from those methods: They supply us with general conclusions from a great number of particular observations. The resemblance of particular parts in different species of animals forms *generic characters*. The resemblances which take place between animals belonging to different *genera* form still more extensive characters, by which orders and classes are determined.' Thus, the characters of the genera, orders, and classes, are so many general consequences derived from particular observations, and, of course, are necessary facts in the history of animals.'

It may be farther remarked, that M. de Buffon's method of classing animals is founded entirely upon a confined and local idea. Domestic, wild, and foreign animals, with a few exceptions, vary according to the climate and state of the country in which a man lives. The rein-deer is a domestic animal in Lapland, and the ichneumon is a domestic in Egypt; but both are foreign animals in France. The guinea-pig is naturally a foreigner in Europe; but it is now a domestic in France and in several other European countries. Many examples might be added to shew the absurdity of this method of arranging natural history; but, as one grand and uniform example, and which, indeed, includes all other examples, we shall refer the reader to the *Histoire Naturelle et particuliere* of M. de Buffon, where he will find animals successively described, in the greatest confusion which the most capricious fancy can imagine. But, to give some idea of the confusion resulting from this order, the ingenious Mr Pennant seriously tells us, in the Preface to his excellent Synopsis of Quadrupeds, that the book was originally designed for private amusement, and as an index for the more easily finding any particular animal described in the voluminous history of quadrupeds by the celebrated M. de Buffon.

But it is time to take a more agreeable view of this great and admirable writer. His history of animals is composed in such a lively, entertaining, and instructive manner, that it must be highly relished by every reader of taste. His facts are numerous, his anecdotes are pleasant, his characters are strongly marked. Some people think his writings diffuse; but it is universally agreed, that this diffusion is so natural, and so bewitching, that the discovery is never made till the reader has perused the whole subject of which the author is treating.

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voluminous and uninteresting. He, therefore, confines his descriptions to domestic birds, and to the larger or more remarkable species. All the other birds, and particularly the smaller kinds, he unites with their kindred species, and groupes them together, as being nearly of the same natural dispositions, and as belonging to the same family. The number of relations, as well as that of varieties, is always greater in proportion to the smallness of the species. A sparrow or a linnet have, perhaps, twenty times more parents than those of the ostrich or the turkey. By the number of parents is to be understood the number of neighbouring species, which have such resemblances to each other as to make them be regarded as collateral branches of the same stem.—These neighbouring species have probably been separated from each other by the influence of climate, of food, and of the succession of time, which brings along with it all possible combinations, and unfolds all the causes of variegation, of perfection, of change, and of degeneration. Independently of natural and accidental varieties, which are much more numerous among birds than quadrupeds, another cause concurs in augmenting apparently the number of species. Birds, in general, are more libidinous and more prolific than quadrupeds. They unite more frequently; and, when they cannot find females of their own species, they intermix more freely than quadrupeds with neighbouring species, and commonly produce fertile mules. This fact is established by the spontaneous commixture of the goldfinch and canary bird; for the mongrels they produce by their union are prolific, and, of course, form new intermediate species, which have more or less resemblance to the parents from whom they derive their origin. Now, whatever we procure by art may be, and actually is, performed by Nature. Fortuitous and voluntary commixtures often happen among animals of different species, and particularly among birds, who frequently,
when

when their natural mates cannot be obtained, use the first bird, similar in magnitude, that presents itself. The necessity of union is so pressing, that most birds, in this situation, are sick, and not unfrequently die, when prevented from gratification. In court-yards, we often see a cock, when separated from hens, lay hold of another cock, of a capon, of a guinea-hen, or of a duck. The pheasant, in the same situation, makes use of a common hen. In volaries, the canary and goldfinch, the red and the common linnet, unite with ardor; and who knows what amours take place in the deep recesses of the woods? who can recount the number of illegitimate embraces among different species? who can divide the bastard branches from the genuine stems*?

Having given an account of M. de Buffon's Natural History of Birds, nearly in his own words, it is almost superfluous to remark, that, in this branch of the science, he uniformly preserves the character he had formerly acquired. His descriptions are accurate and clearly expressed; his historical narrations are not only elegant and entertaining, but discover great learning, candour, and deep research.

* § 18. OF BRISSON.

M. BRISSON, in the year 1756, published at Paris a Synopsis of Quadrupeds and Cetaceous Animals; and a new arrangement of Birds in 1760.

QUADRUPEDS.

* Buffon, Hist. Nat. des Oiseaux, tom. 1. Plan de l'ouvrage, p. 20.

QUADRUPEDS.

These M. Briffon distributes into eighteen Orders.

Ord. I. Comprehends such quadrupeds as have no teeth in either jaw ; as the ant-eater and scaly lizard.

II. Quadrupeds furnished with grinders only, as the sloth and armadillo.

III. — With grinders and dog-teeth only, as the elephant, morse, and manati.

IV. — With six cutting teeth in the under jaw only, as the camel.

V. — With eight cutting teeth in the under jaw, as the giraffe, the goat-kind, the sheep-kind, &c.

VI. — With cutting teeth in each jaw, and whole-hoofed, as the horse and ass.

VII. — With cutting teeth in each jaw, and cloven-hoofed, as the hog-kind.

VIII. — With cutting teeth in each jaw, and three-hoofed, as the rhinoceros.

IX. — With two cutting teeth in each jaw, as the river-hog.

X. — With ten cutting teeth in each jaw, as the tapir, or elephant-hog.

XI. — With cutting teeth in each jaw, and four-hoofed, as the hippopotamus.

XII. — With toes and claws, and two cutting teeth in each jaw, as the porcupine, castor, hare, squirrel, mouse, &c.

XIII. — With toes and claws, and four cutting teeth in each jaw, as the ape-kind, &c.

XIV. — With toes and claws, four cutting teeth in the upper, and six in the under jaw, as the bats, &c.

XV. — With toes and claws, six cutting teeth in the upper, and four in the under jaw, as the seal.

XVI. — With toes and claws, and six cutting teeth in each jaw, as the hyæna, the dog-kind, wefels, badgers, bears, and cats.

XVII. — With toes and claws, six cutting teeth in the upper, and eight in the under jaw, as the mole.

XVIII. — With toes and claws, ten cutting teeth in the upper, and eight in the under jaw, as the opossum-kind.

CETACEOUS ANIMALS.

AFTER the example of Linnæus, M. Brisson places the whale-tribe next to the quadrupeds, and divides them into four orders.

Ord. I. Without teeth, as the Greenland whale, North-caper, the bunch-back whale, &c.

II. With teeth in the under jaw only, as the catodon or potwal-fish, the spermaceti-whale, &c.

III. With teeth in the upper jaw only, as the monoceros.

IV. With teeth in each jaw, as the dolphin, the porpesse, the grampus, &c.

BIRDS.

M. BRISSON divides birds into twenty-six Orders.

Ord. I. Birds with four unconnected toes, three forward, one backward, having their legs covered with feathers nearly down to the talons, a strait bill, the upper mandible a little thicker, and crooked toward the point, and the nostrils half covered with a thick soft membrane, as in the pigeon-tribe.

II. The same characters, with a conical bill bent inward, as in the gallinaceous tribe.

III. — With a short hooked bill, comprehending eagles, hawks, &c.

IV. — With a long conical bill, as in pies, &c.

V. — With a strait bill, and the edges of each side of the upper mandible emarginated, as in the butcher's bird, &c.

VI. — With a strait bill, and both mandibles entire, as in the beef-eater, &c.

VII. — With a slender bill, a little bent arch-ways, as in the hoopoe, &c.

VIII. — With a very small bill, compressed at the base, crooked at the point, and the mouth, when open, larger than the head, as in the goat-sucker, &c.

IX. — With a short conical bill, as in the sparrow, &c.

X. — With a bill shaped like an awl, as the lark, &c.

XI. — With a bill shaped like a wedge, as the fitta, &c.

XII. — With a bill long and slender like a thread, as the honey-sucker, certhia, &c.

XIII. Birds with four unconnected toes, two forward, two backward, as parrots, &c.

XIV. Birds with four toes without membranes, three forward, one backward, the middle toe firmly adhering to the outmost as far as the third joint, as the manakin, bee-eater, &c.

XV. Birds with unconnected toes, the inferior part of the limbs naked, the wings small in proportion to the size of the body, and unfit for flying, as the ostrich, cassowary, &c.

XVI. Birds with three unconnected toes, all forward, the inferior part of the limbs naked, and the wings large and proper for flying, as the plover, &c.

XVII.

XVII. Birds with four unconnected toes, three forward, one backward, the inferior part of the limbs naked, and the wings fit for flying, as the jacanu, woodcock, heron, &c.

XVIII. Birds with four unconnected toes, three forward, one backward, all furnished with membranes through their whole extent; as the coot, gallinule, &c.

XIX. Birds with four toes, the three anterior of which are connected by a membrane extending about one half of their length, the posterior toe loose, and the legs placed far back, and nearly concealed by the abdomen, as the grebe, &c.

XX. Birds with three toes forward, wholly connected by a membrane, and no back-toe, with the legs situated as in Order 19. as the guillemot, penguin, &c.

XXI. Birds with four toes, the three anterior ones entirely connected by a membrane, and the back one loose, with the legs situated as in Order 19. as the diver, &c.

XXII. Birds with three toes forward entirely connected by a membrane, and no back-toe; the legs placed near the middle of the body, and shorter than the body, as the albatross, &c.

XXIII. Birds with four toes, the three anterior entirely connected by a membrane, and the back one loose; the legs placed near the middle of the body, and shorter than the body: and the bill having no teeth, as the petrel, gulls, &c.

XXIV. The same character with the former, only the bill is dentated, as the merganser, duck, &c.

XXV. Birds with four toes, all entirely connected by a membrane, the limbs placed near the middle, and shorter than the body, as the cormorant, pelican, &c.

XXVI. Birds with four toes, the anterior three joined by a mem-

brane, and the posterior one loose ; the legs placed near the middle, and longer than the body, as the flamingo, avocette, &c.

M. Briffon discovers himself to be an able naturalist. His descriptions are clear, concise, and pointed. His principles of arrangement are ingenious, but too confined to answer the purposes of a general system of Nature.

§ 19. OF PENNANT.

FOR more than twenty years past, this gentleman has been occasionally enriching the science of Natural History by uncommon industry, knowledge, and ingenuity. Besides his other valuable works, he has favoured the world with new arrangements of quadrupeds, birds, reptiles, fishes, and shell-animals.

In classing quadrupeds, Mr Pennant, as he candidly acknowledges, makes Mr Ray, that celebrated naturalist, his principal guide ; but, from more recent discoveries, and other circumstances, he has been enabled to improve Mr Ray's arrangement.

CLASS I. QUADRUPEDS.

MR PENNANT divides quadrupeds into four orders. I. Hoofed quadrupeds, as the horse, ox, sheep, deer, &c. II. Digitated, or toed, quadrupeds, including apes, monkies, dogs, cats, &c. III. Pinnated or finned, as the walrus, seals, &c. IV. Winged quadrupeds,

drupeds, as all the bats, twenty one species of which are known and described.

CLASS II. BIRDS.

THIS numerous class of animals Mr Pennant comprehends under two great divisions, viz. I. Land birds. II. Water birds. These two he subdivides into nine orders: Division I. Land birds. Order 1. Rapacious birds, as the vultures, falcons, owls, &c. 2. Pies, as the parrot, cuckoo, crow, kingfisher, &c. 3. Gallinaceous, as the turkey, peacock, partridge, &c. 4. Columbine, including all the species or varieties of pigeons. 5. Passerine, comprehending all the small birds, from the size of a thrush to that of the golden-crested wren, of which the lark, the wagtail, the swallow, &c. are examples. 6. Struthious. This order includes the dodo, the ostrich, and cassowary, the most limited of all the subdivisions of the feathered tribes. Division II. Order 7. Cloven-footed, or waders, as the heron, snipe, plover, &c. 8. Birds with pinnated feet, as the coot, grebe, &c. 9. Web-footed, as the duck, gull, pelican, &c.

CLASS III. REPTILES.

MR PENNANT defines this class in the following terms: ' Body covered either with a shell or strong hide, divided by sutures; four fin-like feet; and a short tail.' Under this class are comprehended the tortoise, the frog, the lizard, the viper, and the snake kinds.

CLASS IV. FISHES.

THESE animals Mr Pennant separates into three orders, or divisions. I. Cetaceous fishes, comprehending all the whale-tribe. II. Cartilaginous fishes, or fishes whose muscles are supported by cartilages, instead of bones. The lamprey, skate, shark, &c. are examples. III. Bonny fishes, whose muscles are supported by bones or spines. In the subdivisions of this order, Mr Pennant follows Sir Charles Linnæus. 1. Apodal, or fishes which are destitute of ventral fins, as the eel, wolf-fish, sword-fish, &c. 2. Jugular, or fishes which have the ventral fins placed before the pectoral, as in the haddock, cod-fish, &c. 3. Thoracic, or fishes with the ventral fins situated beneath the pectoral, as in the flounder, perch, mackerel, &c. 4. Abdominal, or fishes whose ventral fins are placed behind the pectoral, as in the salmon, pike, herring, carp, &c.

CLASS V. CRUSTACEOUS ANIMALS.

UNDER this class Mr Pennant comprehends the numerous tribes of crabs, lobsters, &c.

CLASS VI. WORMS.

THESE are divided into, I. The intestine; II. The soft; III. The testaceous. Under division I. Mr Pennant comprehends the hair worm, the ascarides, and such worms as infest the intestines of men and

and other animals, leeches, &c. II. Mollusca, or soft-worms, as the slug, the aphrodita, the cuttle-fish, &c. III. Testaceous, or animals furnished with shells. These are subdivided into, *a.* Multivalved shells, as the barnacle, &c. *b.* Bivalved shells, as the muscles, razor-shell, oyster, cockle, scallops, &c. *c.* Turbinated shells, or those which have spiral turns, as the turbo, or wreath, the periwinkle, the terebra or auger, garden snail, &c. *d.* Univalve shells not turbinated, as the common limpet, &c.

I AM not without apprehension that this Chapter, to some readers, may appear to be dry and uninteresting. I shall only remark, that it has cost me much labour, as must be evident from the numerous and voluminous works which I have been obliged to peruse and analyse. This much I must be allowed to say, that, when I began the study of Natural History, such an analytical account of the writings on that subject, from Aristotle to the present time, would not only have been highly grateful, but would have saved me more time and study than I can describe. If it shall be so fortunate as to facilitate the labours, or rather prevent young men from the necessity of undergoing the same labour, I shall be happy in the reflection, that I have at least endeavoured to be useful to those explorers of the wonderful works of that inscrutable BEING who planned and executed what Man, who arrogantly styles himself the LORD of CREATION, can never be able fully to unfold. Reflections of this kind, however, should rather stimulate than depress the spirit of human inquiry.

CHAPTER II.

Of the Multiplication and Continuation of Species.

IN treating of this most intricate and delicate subject, I shall endeavour to avoid every idea that might lead to wantonness, or impropriety. No philosophical inquiry into the wonderful operations of Nature, if expressed in irreproachable terms, can merit reprehension.

S E C T. I.

Of the division of Animals into viviparous and oviparous—Some Animals belong to neither of these divisions.

THE idea of dividing animals into *Viviparous* and *Oviparous* must have been as antient as the existence of human beings. But the discovery, that many of the smaller animals were endowed with the faculty of multiplying without the intervention of either of these modes of procreation was reserved to a very modern age. This discovery was made partly by natural observation, but more extensively by the aid of the microscope. In the first volume of this work, I have given many examples of singular modes by which Nature has enabled particular animals to multiply their species*. It would, therefore, be superfluous here to say more upon that subject.

SECT.

* Vol. I. p. 30. et seq.

S E C T. II.

An account of the principal Theories, both antient and modern, which have been published on this subject; particularly with regard to the larger Animals.

THE doctrine of equivocal generation, or the production of animated beings by a fortuitous commixture of inert and corrupted materials, though firmly believed by the antients, has of late been so completely refuted by Redi, and other unprejudiced investigators of the genuine operations of Nature, that it deserves no farther notice.

§ I.—HIPPOCRATES, who lived above five hundred years before Aristotle, taught an opinion upon this subject, which was adopted by Galen, and by most physicians for many ages. Hippocrates maintained the existence of a female fluid, and even that both the male and the female had two fluids, the one strong and active, the other weaker and less active*. A concurrence of the two stronger fluids, he remarks, produces a male, and of the two weaker, a female. This absurd notion he endeavours to support by observing, that several women, who produced girls only by their first husband, have had boys by their second; and that the same thing has often happened to men who have had two wives. Hippocrates next tells us, that

* Hippocrat. lib. de Genitura, p. 129. et lib. de Diæta, p. 198. Lugd. Bat. tom. 1. 1665.

that the semen proceeds from every part of the body, and particularly from the head ; because, he remarks, those who have had the veins behind their ears cut, secrete only a weak and often an unfer- tile semen. The female likewise sheds a feminal fluid sometimes within and sometimes without the uterus. The semen of the male enters the uterus, and intermixes with that of the female ; and, as each possesses two kinds of fluid, the one strong and the other weak, if both of them furnish the strong kind, a male foetus is the conse- quence ; and, if both furnish the weak kind only, the result is a fe- male : Besides, if in the mixture there are more particles of the male than of the female fluid, the child will resemble the father more than the mother ; *et e contra*—

We shall now exhibit a short account of Hippocrates's notion of the mode by which the foetus is formed. The feminal fluids, says he, first mix in the uterus, and gradually thicken by the heat of the mother. The mixture extracts the spirit of heat, and, when too warm, part of the heat escapes into the air. But a cold spirit is like- wise conveyed to it by the respiration of the mother. Thus a cold and a hot spirit alternately enter the mixture, give life to it, and co- ver its surface with a pellicle, which assumes a round figure, because the spirits, by acting in the center, expand the matter equally on all sides. I have seen, this great philosopher remarks, a foetus of six days old : It was a ball of liquor inclosed in a pellicle. The liquor was reddish ; and the pellicle was interspersed with red and colour- less vessels. In the middle of the liquor there was a small eminence, which I imagined consisted of the umbilical vessels, by which the foetus receives nourishment and the spirit of respiration from the mother. A second covering or pellicle gradually forms above the first. Plenty of nourishment is furnished by the menstrual blood, which coagu-
lates

lates and is converted into flesh. This flesh gradually articulates, and derives its form from the spirit. Every part assumes its proper station; the solid parts unite; the moist particles associate by themselves; every thing searches for what is analogous to it; and, in fine, the foetus, by the operation of these causes, is completely formed.

§ 2.—The next theory we shall mention is that of the celebrated **ARISTOTLE**. After enumerating some varieties in the structure and modes of multiplying exhibited to our observation by different species of animals, he examines the opinion of the more ancient philosophers, who maintained that the semen of both male and female was extracted from every part of the body. Aristotle dissents from this opinion; because, says he, though children often resemble both father and mother, they sometimes also resemble their grandfathers. Besides, they resemble their parents in the voice, in the hair, in the nails, and in the gait and manner of walking. Now, proceeds our author, it is impossible for the semen to come from the hair, from the voice, from the nails, or from any external quality, as that of the mode of walking. Hence children resemble not their parents because the semen proceeds from all parts of the body. The feminal liquor of the male, Aristotle remarks, is secreted from the blood; and the menstrual fluid of the female is likewise a secretion from the blood, and the only matter that contributes to generation. Females, he continues, have no other prolific fluid; no mixture, therefore, of male and female fluids take place. This he attempts to prove by observing, that some women conceive without any titillation; that few emit any fluid in coition; that, in general, those who are brown, with a masculine air, have no emission, and yet their powers of pro-

VOL. II. L creation

creation are not less than those of a fairer complexion and more delicate appearance, who emit copiously. Thus, he concludes, women furnish nothing for the purposes of generation, but the menstrual blood. This blood is the matter of generation, and the male fluid contributes the form only. The male fluid is the efficient cause, and the chief principle of motion; it is to generation what the sculptor is to a block of marble: The seminal fluid is the sculptor, the menstrual blood the marble, and the foetus the figure. The male semen gives to the menstrual blood both life and motion, or a kind of soul. This soul is neither material nor immaterial, because it can neither act upon matter, nor augment the menstrual blood, which is the only matter necessary to generation. It is a spirit, says our philosopher, similar to that of the element of the stars. The heart is the first production of this soul; which is the cause of its own growth, and of the growth and disposition of all the other members. The menstrual blood contains the *capacities* of all the parts of the foetus; the soul or spirit of the male semen makes the heart begin to act, and communicates to it the powers of bestowing action on the other viscera; and, in this manner, the different parts of the animal are successively unfolded.

These two great men have had each their followers. Most of the scholastic philosophers adopted Aristotle's theory of generation; but the ancient physicians, in general, adhered to the theory of Hippocrates. In this manner near eighteen centuries passed without the vestige of any thing new concerning this mysterious subject. Upon the revival of literature, however, anatomists began to make researches into the nature of generation.

§ 3.—FABRICIUS AB AQUAPENDENTE first made a course of experiments

experiments upon the impregnation and expansion of the eggs of fowls, the substance of which shall be laid before the reader. Fabricius distinguishes the matrix of a hen into two parts, the one superior, the other inferior. The superior part, which he calls the *ovarium*, contains an assemblage of a great number of small yellow eggs, of a round figure, the sizes of which vary from that of a mustard seed to that of a walnut. These eggs are attached to one another by foot-stalks, and the whole group has a resemblance to a bunch of grapes.

After impregnation, an egg is detached from the common pedicle, and gradually descends, through a winding canal, into the inferior part of the matrix. The canal is filled with a liquor similar to the white of an egg. In this canal the egg receives its white liquor, the membrane in which it is inclosed, the two cords (*chalasae*) that run through the white, and join it to the yolk, and the shell, which is suddenly formed before exclusion. These cords, says Fabricius, are the part of the egg which is impregnated by the seminal spirit of the male; and it is here also that the rudiments of the foetus first make their appearance. The egg is not only the true matrix, or the place where the foetus is formed, but upon it the whole process of generation depends. The egg is the great agent in generation; it furnishes both the matter and the organs. The substance of the cords is the matter of which the chick is formed; the white and the yolk supply it with nourishment; and the seminal spirit of the male is the efficient cause. This spirit communicates to the cords, first, an alterant quality, then a forming quality, and, lastly, a power of augmenting, &c.

§ 4.—HARVEY, our celebrated countryman, who, at so late a

period, it is almost incredible to think, first discovered the circulation of the blood, has likewise given us an ingenious treatise on generation. He flourished about the middle of last century, and was physician to Charles I. He alledges, that men, and all other animals, proceed from eggs; that, in viviparous animals, the first produce of conception is a kind of egg; and that the only difference between the viviparous and oviparous is, that, in the former, the fœtus begins to exist, increase, and arrive at its full growth while it remains in the uterus; but that, in oviparous animals, the fœtus begins to exist, when in the form of an egg, in the body of the mother, and it is only after exclusion and incubation, that it becomes a living animal. It farther deserves to be remarked, says he, that, in oviparous animals, some retain their eggs till they be perfect, as birds, serpents, and oviparous quadrupeds; and that others exclude their eggs before they have arrived at maturity, as fishes, crustaceous, and testaceous animals. The eggs laid by these creatures are only the rudiments of eggs, which afterwards acquire membranes and a white, and attract nourishment from the matter with which they are surrounded. He adds, that there are insects, caterpillars, for example, which are only imperfect eggs; they search for and take nourishment, and, at the end of certain times, they arrive at the chrysalis state, which is a perfect egg. Another difference is remarkable in oviparous animals: The eggs of hens, and of other birds, are of different sizes, but those of fishes, frogs, &c. who lay them before they are perfect, are all of the same size. He indeed observes, that, in pigeons, who lay two eggs, all the small eggs, which remain in the ovarium, are of the same bulk; and that the two only which are next to be excluded exceed the size of the rest. The same phænomenon takes place in cartilaginous fishes, as in the ray, which brings to maturity only two eggs at a time.

Harvey

Harvey next describes anatomically the parts necessary to generation ; and he remarks, that the situation of the anus and vulva in birds differs from that of all other animals, the anus being placed before, and the vulva behind. Hens produce eggs without the intervention of the cock ; but, though seemingly perfect, they are fewer in number, and totally unfertile. He credits not the common opinion, that a few days intercourse with the cock are sufficient to impregnate all the eggs which a hen shall lay during a whole year ; but he acknowledges, that he separated a hen from the cock for twenty days, and that all the eggs she laid were fecundated.

The two cords (*chalazae*) which Fabricius ab Aquapendente considered to be the germ, or part produced by the male semen, are found in unimpregnated, as well as impregnated eggs ; and Harvey justly remarks, that these parts neither proceed from the male, nor receive the impregnation. The part of the egg which receives the impregnation is a small white circle situated upon the membrane that covers the yolk, and has the appearance of a cicatrice about the size of a lentil. Harvey likewise remarks, that this cicatrice is found in all eggs, whether they be fecundated or not ; and that those are deceived who imagine it to be produced by the semen of the male. It is of the same size and form in fresh eggs as in those which have been long kept. But, as soon as the process of hatching is begun, whether by artificial heat or by that of the hen, this small mark or cicatrice gradually augments and dilates like the pupil of the eye. This is the first change, and it is visible after a few hours of incubation. When the egg has been heated 24 hours, the yolk, which was formerly in the centre, rises towards the cavity at the thick end of the egg. This cavity is occasioned by the evaporation of the more fluid part of the white, the heavier part of which falls down to the small

small end. The cicatrice or speck on the membrane of the yolk is elevated along with it, and applies itself to the membrane which lines the cavity at the thick end. This speck is now as large as a pea ; and a white point is distinguishable in the middle of it, with several circles, of which that point appears to be the common centre.

At the end of the second day, these circles are larger and more conspicuous ; and they divide sometimes into two, and sometimes into three parts, which are of different colours. A small external protuberance likewise appears, nearly resembling a little eye, with a white point or cataract on the pupil. Between the circles is contained a transparent liquor by means of a very thin membrane. The speck, which is now become a small liquid globe, appears as if it were situated in the white, rather than on the membrane of the yolk. On the third day, the transparent liquor, as well as the membrane in which it is inclosed, is considerably augmented. On the fourth day, a small line of blood, of a purple colour, appears on the circumference of the liquid globe ; and, at a little distance from the centre, we perceive a dot or point, of a bloody colour, which has pulsations like a heart. It is visible at every diastole, and disappears during the systole. Two small blood-vessels issue from this animated point, and terminate in the membrane which contains the transparent liquor. These blood-vessels set off from the same place nearly in the same manner as the roots of a tree set off from the trunk. It is in the angle which these roots form with the trunk, and in the middle of the liquor, that the animated point is situated.

About the end of the fourth, or beginning of the fifth day, the animated point is so much enlarged, that it has the appearance of a small bladder filled with blood ; and by its contractions and dilations,

tions, it is alternately filled and emptied. On the same day, we perceive distinctly, that this bladder is divided into two parts, each of which dilates and contracts in the same manner. Round the shortest of the blood-vessels mentioned above, a kind of cloud appears, which, though almost transparent, obscures the view of the vessel. This cloud becomes every hour thicker ; it attaches itself to the root of the blood-vessel, and seems to depend from it like a small globe. This globe stretches out, and appears to divide into three parts, one of which is globular, and larger than the other two ; and here we perceive the rudiments of two eyes, and of the whole head. At the end of the fifth day, in the remainder of this lengthened globe, the commencement of the vertebrae. On the sixth day, the parts of the head are more apparent. We can distinguish the coats of the eyes, the thighs, and the wings ; and then the liver, the lungs, and the beak. The foetus now begins to move and to stretch out its head, though, of the inferior parts, nothing but the viscera are yet formed ; for the thorax, the abdomen, and all the external coverings of the fore part of the body, are still wanting. At the end of this day, or the beginning of the seventh, the claws begin to be visible ; the chick opens and moves its beak ; and the anterior parts of the body begin to cover the viscera. On the seventh day, the chick is entirely formed ; and, from this time till it issues from the egg, nothing remarkable happens but a gradual expansion of all the parts it had acquired during the first seven days. The feathers appear on the 14th or 15th day ; and, on the 21st, the chick escapes from the egg, by breaking the shell with its bill.

Beside these experiments upon eggs, Harvey made many others upon female deer. They receive the male about the middle of September.

tember. A few days afterwards, the *borns* * of the uterus appear to be thicker and more fleshy than usual. They are, at the same time, more flaccid ; and, in each of their cavities, five carunculae, or soft warts, appear. About the 26th or 28th of September, the uterus is still thicker ; and the five carunculae are swelled nearly to the size and form of a nurse's nipple. On opening them with a scalpel, they appeared to be filled with an infinite number of white points.

About the end of October, or the beginning of November, when the females were separated from the males, the thickness of the *borns* began to diminish, and their internal surfaces were swelled, and seemed to be glued together. The carunculae still remained ; and the whole mass resembled the surface of the brain, being so soft that it could not be touched without derangement. Harvey farther informs us, that on the 13th or 14th of November, he perceived thin filaments, like those of a spider's web, which traversed the cavities of the *borns*, and even that of the uterus itself. These filaments derived their origin from the superior angle of the *borns*, and, by their number, formed a kind of membrane or empty sac. A day or two afterwards, this sac was filled with a white, aqueous, viscid matter, which adhered to the uterus by a species of mucilage ; and the adhesion was most apparent at the superior part of the uterus, where the rudiments of the placenta began then to appear. In the third month, this sac contained an embryo about an inch and a half in length, and likewise an internal sac, called the *amnios*, inclosing a transparent crystalline liquor, in which the foetus swam. At first, the foetus was only an animated point, like that which appeared in the hen's egg.

Every

* Two fleshy processes, one of which issues from each side of the *fundus uteri*, in the form of little *borns*, and are remarkable in some quadrupeds.

Every thing now proceeded and terminated in the same manner as described with regard to the chick, with this difference only, that the eyes of the chick appeared much earlier than those of the deer. About the 19th or 20th of November, the animated point was visible. A day or two afterwards, the oblong body, which contained the rudiments of the foetus, made its appearance. In six or seven days more, the foetus was so completely formed, that all its members, and even its sex, were distinguishable. But the heart and viscera were still bare; and it was not till a few days after, that they were covered with the abdomen and thorax. This, Harvey remarks, is the last work, and the flating of the edifice.

From his experiments upon hens and deer, Harvey infers, that all female animals have eggs; that, in these eggs, a separation of a transparent crystalline liquor, contained in a sac (*amnios*), takes place, and that another external sac (*chorion*) incloses the whole fluids of the egg; that, in the crystalline liquor, the first object which appears is an animated sanguineous point; and, lastly, that the original formation of viviparous animals is effected in the same manner with that of the oviparous. Harvey farther concludes, that generation is an operation of the uterus alone; for not a drop of the male semen ever enters that organ. The uterus, he asserts, conceives by a kind of contagion communicated to it by the semen of the male, in the same manner, nearly, as the load-stone communicates a magnetic virtue to iron. This male-contagion acts not only on the uterus, but on the whole body of the female, which is entirely fecundated, though the uterus alone possesses the faculty of conception, in the same manner as the brain has the sole power of conceiving ideas. The ideas, or impressions, conceived by the brain, are similar to the images of the objects transmitted to it by the senses; and the foetus,

which may be considered as the idea of the uterus, is similar to that by which it is produced. Hence the reason why children resemble their fathers, &c.

§ 5:—ABOUT fifty years after the trials of Harvey, MALPIGHIUS* carefully examined the cicatrice, which is the most essential part of an egg: He found that it was large in impregnated eggs, and small in those which had received no impregnation. He likewise discovered, that, in eggs which had never been sat upon, the white point mentioned by Harvey as the first part that assumes animation, is a small purse or bubble swimming in the liquor bounded by the first circle; and that the embryo is visible in the centre of this purse. The membrane of the purse, which is transparent, allowed him to see distinctly the foetus within it. Malpighius, from this first observation, concludes with propriety, that the foetus exists in the egg before incubation, and that the rudiments of the embryo are even then deeply rooted. After ascertaining this important fact, Malpighius proceeded to examine the cicatrice of unimpregnated eggs, which is smaller than in those which had received an impregnation. Near the centre of the cicatrice, instead of a bubble including the foetus, there is a globular mole or unorganized mass, which, when opened, exhibits nothing like regularity or arrangement of parts: It has only some appendages filled with a viscid but transparent liquor; and this unformed mass is enveloped in several concentric circles.

After six hours incubation, however, the cicatrice is considerably enlarged; and, in its centre, a bubble or globule, formed by the amnios,

* Malpighii pullus in ovo.

nios, is easily distinguished. This globule is filled with a fluid, in the middle of which the head and back-bone of the chick are visible. Six hours afterwards, the parts are all enlarged, and, of course, more apparent. In six hours more, that is, eighteen hours from the commencement of incubation, the head is larger, and the spine is lengthened; and, at the end of twenty-four hours, the head has acquired a bended posture, and the spine is of a whitish colour. The vertebrae are ranged on each side of the spine, like small globules; and, about the same time, the wings begin to shoot, and the head, neck, and breast are lengthened. At the end of thirty hours, nothing new appears, except that all the parts are enlarged, and particularly the amnios. Around this membrane, we can perceive the umbilical vessels, which are of a dark colour. In thirty eight hours, the head of the chick is very large, and three vesicles appear in it surrounded with membranes, which likewise include the spine of the back, through which, however, the vertebrae are still visible. At the end of forty hours, it was admirable to observe, continues our author, the chick living in the centre of the liquor contained in the amnios. The back-bone was increased, the head was bended, the vesicles of the brain were less bare, the rudiments of the eyes appeared, the heart beat, and the blood circulated.

At the end of the second day, the foetus appeared swimming in the liquor of the amnios; the head, which appeared to be composed of vesicles, was bended; the back-bone and vertebrae were lengthened; the heart, which hung out of the breast, always beat three times successively, because the fluid it contains is pushed from the auricle into the ventricles, from the ventricles into the arteries, and, lastly, into the umbilical vessels. In fourteen hours more, or sixty-two hours from the beginning of incubation,

the chick, though stronger, remained still with its head bended in the liquor of the amnios: Veins and arteries were perceived in the brain; and the rudiments of the eyes, and of the spinal marrow, appeared. At the end of three days, the body of the chick was crooked. Beside the two eyes, five vesicles filled with liquor were seen in the head; the rudiments of the thighs and of the wings were discerned; the body began to assume flesh; and the pupils of the eyes, and likewise the crystalline and vitreous humours, were distinguishable. At the termination of the fourth day, the vesicles of the brain were nearer each other; the processes of the vertebrae were longer; the wings and the thighs had become stronger in proportion as they grew longer; ~~the~~ whole body was covered with a gelatinous flesh; the umbilical vessels had pierced through the abdomen; and the heart was inclosed by a thin transparent membrane. On the fifth, and at the end of the sixth day, the vesicles of the brain began to be covered; the spinal marrow, which was now more solid, was divided into two parts, and advanced along the trunk; the thighs were longer, and the wings were unfolded; the abdomen was shut and tumified; the liver was distinctly visible, and of a dark colour; the two ventricles of the heart beat; the body of the chick was covered with skin; and the points of the feathers began to appear. On the seventh day, the head was very large; the brain was covered with its membranes; the beak appeared between the two eyes; the wings, the thighs, and the legs, had acquired their perfect form; the heart seemed to be composed of two ventricles, like two contiguous globules, united at their superior part with the auricles; and two successive pulses were remarked both in the ventricles and auricles, as if there had been two separate hearts.

§ 6.—WE shall now give a short account of DE GRAAF's experiments upon rabbits. He dissected a female rabbit half an hour after copulation. The horns of the uterus, he remarks, were uncommonly red. No change had taken place in the ovaria, nor in the eggs which they contained; and there was not a vestige of semen in the vagina, in the uterus, or in the Fallopian tubes. Six hours after copulation, he dissected another rabbit; and observed that the follicles, which, in his estimation, contain the eggs in the ovarium, were become red; but he found no semen either in the ovaria or any where else. Twenty hours after copulation, he dissected a third rabbit; and remarked in one ovarium three, and in the other five follicles much altered; for, instead of being clear and limpid, they were opaque and reddish. In another, dissected twenty-seven hours after copulation, the horns of the uterus, and the superior canals which terminate in them, were still more red, and their extremities embraced the ovarium on all sides. In another, opened forty hours after copulation, he found in one ovarium seven, and in the other three follicles charged. Fifty-two hours after copulation, he examined another, and discovered in one ovarium four charged follicles, and one in the other. Having opened these follicles, he discovered in them a kind of glandular liquor, with a small cavity in the middle, in which he could perceive no fluid. This circumstance led him to suspect that the transparent liquor, usually contained in the follicles, might have been discharged by some rupture of the membranes. He searched in vain for this matter in the canals which terminate in the horns of the uterus, and in the horns themselves. He remarked, however, that the membranes which line the horns of the uterus were much swelled. In another rabbit, dissected three days after copulation, he observed, that the superior extremity of the canal, which terminates in the horns of the uterus, straitly embraced

braced each side of the ovarium ; and, after separating it from the ovarium, he perceived, in the right ovarium, three follicles somewhat larger and harder than usual. After carefully searching the canals formerly mentioned, he tells us, that he discovered an egg in the right canal, and two more in the right horn of the uterus ; but they exceeded not the size of mustard seeds. These little eggs had each two membranes, of which the internal one was filled with a limpid liquor. Upon examining the other ovarium, he found four charged follicles ; three of them were whiter, and had some limpid fluid in their centres ; but the fourth was of a darker colour, and contained no liquor, which made him suspect that the egg had descended. He therefore searched the corresponding canal and horn of the uterus, and found an egg in the superior extremity of the horn, which was exactly similar to those he had discovered in the right horn. He says, that the eggs, when separated from the ovarium, are ten times smaller than before their separation. The difference in size, he imagines, is owing to this circumstance, that the eggs, while in the ovarium, contain another matter, namely, the glandulous liquor which he remarked in the follicles.

He opened another rabbit, four days after copulation, and he found in one ovarium four, and, in the other, three follicles void of eggs. In the horns of the uterus corresponding to the ovaria, he found four eggs in the one, and three in the other. These eggs were larger than those he had discovered three days after copulation. They were nearly as large as the lead used for shooting small birds ; and he remarked, that, in these eggs, the interior membrane was separated from the exterior, and the whole appeared as if a second egg was contained within the first. In another rabbit, dissected five days after copulation, he found five empty follicles in the ovaria, and

and the same number of eggs in the uterus, to which they firmly adhered. These eggs were as large as the shot employed for killing hares, and the internal membrane was still more apparent than in the last experiment. Six days after copulation, he opened another rabbit; and, in one of the ovaria, found six empty follicles, but five eggs only in the corresponding horn of the uterus, and they seemed to be all accumulated into one mass: In the other ovarium, he saw four empty follicles, and found but one egg in the corresponding horn. These eggs were of the size of the largest fowling shot. Our anatomist opened another rabbit seven days after copulation, and found in the ovaria some empty follicles, which were larger, harder, and more red than those he had formerly observed. He perceived as many transparent tumors in different parts of the uterus. Having opened these tumors, he took out the eggs, which were as large as small pistol bullets. The internal membrane was now more distinct than formerly; and within this membrane he saw nothing but a very transparent liquor. In another rabbit, dissected eight days after copulation, he found in the uterus the tumors or cells which contain the eggs; but they adhered so firmly to the uterus, that he could not detach them. Nine days after copulation, he found the cells containing the eggs greatly enlarged, and perceived in the middle of the liquor inclosed by the internal membrane a thin small cloud. Ten days after copulation, he found, in another rabbit, that the small cloud was thicker and darker, and formed an oblong body resembling a little worm. Twelve days after copulation, he perceived distinctly the embryo, which was now so apparent, that he could distinguish its different members. He saw, in the region of the breast, two red and two white points, and, in the abdomen, a reddish mucilaginous substance. The head of the foetus, fourteen days after copulation, was large and transparent; the eyes were prominent;

nent; the mouth was open; the ears began to appear; the backbone was whitish, and bended towards the sternum. From each side of the spine, small blood-vessels arose, the ramifications of which extended along the back as far as the legs. The two red points were now considerably enlarged, and seemed to be the rudiments of the two ventricles of the heart. On each side of the red points he saw two white ones, which were the rudiments of the lungs. In the abdomen, he perceived the rudiments of the liver, which was reddish, and a small body twisted like a thread, which was the stomach and intestines. After this, till the 31st day, when the female rabbit brings forth, nothing was to be remarked but the gradual expansion and growth of the parts which had already been formed.

De Graaf, from these experiments, concludes, that all viviparous animals have eggs; that these eggs are contained in the ovaria or testicles; that they cannot be detached till they are fecundated by the male semen; because, he remarks, the glandular liquor, by means of which the eggs are enabled to escape from their follicles, is not secreted till after impregnation. He alleges that those who imagine they have seen pretty large eggs in three days have been deceived; because, in his estimation, the eggs, though fecundated, remain longer in the ovarium, and, instead of augmenting, become ten times less than formerly, and never begin to grow till after their descent from the ovaria into the uterus.

This pretended discovery of eggs in the testicles of females attracted the attention of many anatomists. In the testicles of viviparous females, however, they found only small bladders, which they did not hesitate to consider as real eggs; and, therefore, they called the testicles *ovaria*, and the vesicles *eggs*. They likewise asserted, that
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the size of these eggs differed in the same ovarium ; that the largest in the ovaria of women did not exceed the bulk of a small pea ; that they are very minute in young girls ; but that they increase with age and intercourse with men ; that not above 20 could be discovered in each ovarium ; that these eggs are fecundated in the ovarium by the spiritous part of the male semen ; that, after impregnation, they separate, and fall into the uterus through the Fallopian tubes ; that the foetus is formed of the internal substance of the egg, and the placenta of its external part ; that the glandulous matter, which does not exist in the ovarium till after a fruitful embrace, compresses the egg, and forces it to part from the ovarium, &c.

But, of all anatomists, Malpighius and Valsineri seem to have written with most judgment upon this intricate subject. Malpighius, after examining the testicles of many cows and other female animals, assures us, that he found in all of them vesicles of different sizes, whether the females were very young, or adults. These vesicles are inclosed in a membrane, the inside of which is interspersed with blood-vessels ; and the vesicles are filled with a kind of lymph or liquor, which, like the white of an egg, coagulates and hardens when exposed to the heat of a fire. In process of time, a firm yellow body adheres to the testicles. It is prominent, increases to the size of a cherry, and occupies the greatest part of the ovarium. This body consists of several angular lobes, the position of which is very irregular, and it is covered with a membrane interspersed with nerves and blood vessels. When the yellow body exceeds not the size of a grain of millet, it is roundish, and its substance, when cut, has a warty appearance. When it has acquired nearly the size of a pea, it is shaped like a pear ; and, in its centre, there is a small cavity filled with liquor. In some of these yellow bodies, after they

have come to maturity, Malpighius asserts, that, in the yellow bodies, he saw, near the centre, a small egg, about the size of a millet seed; and that, after they had discharged the eggs, these bodies became empty and flaccid. He supposed that Nature designed this yellow glandulous body for the preservation of the egg, and for making it escape from the testicles; and, perhaps, he remarks, it contributed to the formation of the egg; and, consequently, he concludes, that the vesicles, which are at all times found in the ovarium, and always differ in size, are not the real eggs which receive the impregnation, but only serve to produce the yellow bodies in which the eggs are formed. Besides, though these yellow bodies are not uniformly found in every ovarium; yet the rudiments of them are always apparent. Malpighius found the marks of them in new born heifers, in cows with calf, and in pregnant women; and, therefore, he concludes, that these yellow glandular bodies are not, as alledged by De Graaf, a result of impregnation. The yellow bodies, he remarks, produce unfecundated eggs, which fall out of the ovarium independent of any communication with the male, as well as those which fall after impregnation. When impregnated eggs fall into the uterus, every thing proceeds in the manner which De Graaf has described.

§ 7.—WE shall now give an abridged view of the remarks of VALISNIERI, a disciple of Malpighius. In the year 1692, he began his experiments upon the testicles of the sow, which differ from those of cows, of mares, of sheep, and of most other viviparous animals; for they resemble a small bunch of raisins, the grains of which are round and prominent. Between these grains are smaller ones, not yet arrived at maturity. These grains seem not to be covered

vered with any common membrane. They are, he remarks, analogous to the yellow bodies observed by Malpighius in cows ; they are round, and of a reddish colour ; their surface is interspersed with blood-vessels ; and the whole grains form a mass which is larger than the ovarium.

In every sow, the glandular bodies are not of the same colour. In some, they are more red ; in others more clear ; and their sizes vary from that of the smallest seed, to that of a raisin. When opened, a triangular cavity appears ; it is filled with a limpid liquor, which coagulates with heat, and becomes white, like that contained in the vesicles. Valisnieri expected to find eggs in some of these cavities. But this expectation was disappointed ; for, though he carefully searched all the glandular bodies of a number of sows, and other animals, he could never discover the egg, which Malpighius says he once or twice found. Under these glandular bodies, the vesicles of the ovarium appeared, which were more or less numerous according as the glandular bodies were larger or smaller ; for, in proportion to the largeness of the glandular bodies, the vesicles diminished. Some vesicles were of the size of a lentil, and others did not exceed that of a millet seed. In the testicles, when raw, from twenty to thirty-five vesicles might be reckoned ; but, when boiled, a much greater number appear ; and they are so firmly attached, that they cannot be separated without breaking some of them. In the testicles of a young sow, which had never been impregnated, he found, as in the others, glandular bodies ; their triangular cavities were likewise filled with lymph ; but no eggs could he discover in either of them. The vesicles of this young sow were more numerous than in those which had brought forth, or in those which were impregnated previous to the time of examination. In

the testicles of another sow, which was far advanced in pregnancy, Valisnieri found two of the largest glandular bodies, which were flaccid and empty, and others, of a smaller size, in their usual state. In others, which he dissected when with young, he observed, that the number of glandular bodies always exceeded that of the foetuses.

Valisnieri, after his experiments upon sows, repeats those of Malpighius upon cows, and found them to be exactly conformable to truth, with this exception that he was never able to discover the egg which Malpighius imagined he had seen in the interior cavity of the glandular bodies. The experiments of Valisnieri are not only numerous but accurate. Among other animals, he examined the ewe, and discovered, that she has never a greater number of glandular bodies in her testicles than of foetuses in the uterus. In young ewes which had never been impregnated, there is but one glandular body in each testicle ; and, when one is emptied, another succeeds. This glandular body occupies the greatest part of the testicle ; and, after it is emptied and disappears, another begins to answer the purposes of a future generation. In the testicles of a she-ass, he found vesicles as large as cherries. The testicles of female wolves, dogs, and foxes, are covered with a membrane, like a purse. In a bitch which began to be in season, but had not been approached by the male, Valisnieri found the internal of this moistened with a liquor that resembled whey, and two glandular bodies in the right testicle, which occupied nearly the whole extent of the testicle. In each glandular body was a small nipple, with a fissure, from which, without pressing it, a liquor resembling clear whey issued ; he therefore concluded, that this liquor was the same which he found in the purse. Into this fissure he blew with a pipe, and the whole glandular body swelled. He opened the body, and found an internal cavity which communicated
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with the nipple, and contained a considerable quantity of liquor. Valisnieri was always in hopes that he would discover the egg; but, notwithstanding all his researches, his hopes were uniformly frustrated. He dissected another bitch four or five days after receiving the male, and found in the testicles three glandular bodies perfectly similar to the former. He every where searched for the egg, but was still disappointed. He discovered, by means of the microscope, the glandular bodies to be a net-work composed of an infinite number of globular vesicles, which served to filter the liquor that issued from the nipple.

Valisnieri then opened another bitch which was not in season; and, after trying to introduce air between the testicle and the purse, he found that it dilated like a bladder. Having removed the purse, he discovered two glandular bodies on the testicles; but they had neither nipple nor fissure, and no liquor distilled from them. In another bitch, that, two months before, had brought forth five whelps, he found five glandular bodies; but they were much diminished in size, and began to disappear without leaving any cicatrices. A small cavity only remained in their centre, but it contained no liquor.

After these and many other ineffectual dissections made upon a great variety of quadrupeds, Valisnieri was desirous of examining the testicles of women. A young country-woman, who had been several years married, and was killed by a fall, afforded him the first opportunity. Though of a vigorous constitution, she had never born any children. He endeavoured to discover whether the cause of her barrenness existed in the testicles; and he found that all the vesicles

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were filled with a blackish corrupted matter. In a girl of eighteen years of age, who had been educated in a convent, and had every mark of virginity, he found the right testicle a little longer than the left: Its figure was oval, and its surface was somewhat unequal. This inequality was occasioned by five or six vesicles which protruded on the outside of the testicle. One of these vesicles, which was more prominent than the rest, he opened, and a quantity of lymph rushed out. A glandular substance, in the form of a crescent, and of a reddish yellow colour, surrounded this vesicle. He cut the testicle transversely, and found a number of vessels filled with limpid liquor; and he remarked, that the Fallopian tube of this testicle was redder and somewhat longer than the other, as he had frequently observed in other animals, when in season. In a girl, aged five years, he found the testicles with their vesicles, their blood-vessels, and their nerves. In the testicles of a woman of sixty years, he discovered some vesicles, and the vestiges of a glandular substance.

Valisnieri, from these experiments and observations, infers, that the work of generation is carried on, and brought to perfection, in the female testicles, which he persisted in regarding as ovaria, though he never could find eggs in them. He likewise remarks, that, for the impregnation of the egg, it is not necessary that the male semen should enter the uterus. He imagines, that the egg, after being impregnated in the ovarium, escapes through the nipple of the glandular body; that it then falls into the Fallopian tube; and that it gradually descends, and at last attaches itself to the uterus. The spirit of the male seed, in his estimation, ascends into the ovarium, penetrates the egg, and gives life and motion to the foetus which previously existed in it.

This system of eggs, though it elucidates no branch of the subject, and probably has no foundation in Nature, would have received the universal assent of physicians, if, nearly about the same time, another hypothesis had not solicited attention : It was founded upon the discovery of spermatic animalcules by means of the microscope.

§ 8.—THIS discovery, which we owe to LEUWENHOEK and HARTSOEKER, was confirmed by Andrii, Valisnieri, Bourguet, and many other philosophers, and diligent observers. In male semen, the number of animalcules is so great, that it seems to be entirely composed of them ; and Leuwenhoek tells us, that he saw many millions of them in a drop less than the smallest grain of sand. Though none of them appear in females, they are found in the semen of all males, both in the testicles, and in the vesiculæ seminales. When semen is exposed to a moderate heat, it thickens, and the movements of all the animalcules are suddenly stopped. But, when allowed to cool, it dilutes, and the animalcules continue to move till the liquor again thickens by evaporation. In proportion to the dilution of this fluid, the number of animalcules is augmented ; and, when greatly diluted by the addition of water, the whole substance of the fluid seems to be composed of animals. When, by heat, or by drying, the motion of the animalcules is about to cease, they seem to make a nearer approach to each other, to have a common circular motion in the centre of the small drop under observation, and to perish, all of them, at the same instant. But, when the quantity of liquor is greater, it is easy to perceive them dying in succession. These animalcules have been said to be of different figures ; but they are all oblong, thin, without any members, and move with rapidity in every direction.

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Having examined the semen of a cock, Leuwenhoek perceived a number of animals similar to river eels, which were so minute, that 50,000 of them were not equal in bulk to a grain of sand. Of the animalcules in the semen of a rat, it required, he says, many millions to make the thickness of a hair. Leuwenhoek, from his numerous observations, was persuaded that the whole substance of the semen was only a congeries of animalcules. He saw these animalcules in the semen of men, of quadrupeds, of birds, of fishes, and of insects. In the semen of a man and that of a dog, he imagined he saw two species of animalcules, resembling males and females. He opened a bitch which, some time before the experiment, had three times received the same dog. He could not perceive, with the naked eye, any male semen in the uterus or its appendages; but, by the aid of the microscope, he found the spermatic animals of the dog in both horns of the uterus; which evidently proves, he remarks, that the male semen enters the uterus, or, at least, that the spermatic animals of the dog had arrived there by their own motion, which enables them to pass over the space of four or five inches in half an hour.

These and many other experiments of Leuwenhoek were repeated by several observers, who found them, in general, exactly consonant to truth. Daleppatius, however, and some others, who were inclined to exceed Leuwenhoek in acuteness of vision, alleged that, in the semen of a man, they discovered not only animals resembling tadpoles, but Daleppatius insists, that he saw one of these animals break through its coat or covering: It was then, says he, no longer an animalcule, but a real human body, in which he easily distinguished the two arms and legs, the breast and the head. Daleppatius believed that he saw what he describes; but he deceived himself; ~~for~~ this

this embryo, according to his account, was more completely formed, at the time of its transmigration from the state of a spermatric worm, than it is in the womb of the mother at the end of the fourth or fifth week.

It is alleged by M. Andry, that he could discover no animalcules in human semen previous to the age of puberty ; that they exist not in the semen of very old men ; that there are few of them in those who are affected with the venereal disease, and that those few are in a languishing state ; that none of them appear to be alive in impotent persons ; and that the animalcules in the semen of men have a larger head than those of other animals, which corresponds, he remarks, with the figure of the foetus and infant.

Leuwenhoek, Andry, and many others, exerted every effort to discredit the egg-system. They discovered living animalcules in the semen of all males ; they insisted that these animalcules could not be considered simply as inhabitants of this fluid, since the quantity of them was larger than that of the fluid itself, and since nothing similar to them was to be perceived either in the blood, or in any other of the animal fluids : They maintained, that, as females furnished no animalcules, their fecundity was solely derived from the males ; that the existence of living animals in the semen threw more light upon the nature of generation than all the former discoveries on this interesting subject ; because the greatest difficulty in accounting for generation is to conceive how life is first produced, the future expansion and growth of the parts being only accessory operations ; and, consequently, not a doubt could remain, that these animalcules are destined by Nature to become men, or perfect animals, according to the species.

It was not the first woman, according to this system, but the first man, who contained the germs of the whole human race in his own body. The pre-existent germs are no longer inanimate embryos locked up in eggs, and included, *in infinitum*, within each other. On the contrary, they are small animals, or organized living *homunculi*, included in each other in endless succession, and who, to make them men, or perfect animals, require nothing but expansion of parts, and a transformation similar to that of caterpillars when changed into winged insects.

We have now pretty fully explained the two more modern systems, or rather theories, of the generation of animals, namely, the system of eggs, and that of spermatic worms.

Neither of these systems received the assent of the celebrated COUNT DE BUFFON. Both systems, he remarks, suppose an infinite progression, which is a mere illusion of the brain. A spermatic worm, says he, is a thousand million of times smaller than a man. If, therefore, the body of a man be assumed as a unit, that of a spermatic worm will be expressed by the fraction $\frac{1}{1,000,000,000}$, a number which consists of ten cyphers. But, as man is to a spermatic worm of the first generation in the same proportion as this worm is to a worm of the second generation, the size of this last spermatic worm will be expressed by a number consisting of nineteen figures. In this fanciful calculation, he proceeds to the sixth generation, which would require to be expressed by fifty-five cyphers. But, if this calculation, he continues, were carried on to the sixteenth generation, the minuteness would exceed all the powers of expression. Hence, he concludes, the probability of this hypothesis vanishes in proportion as the object diminishes. The same calculation applies equally

equally to eggs, as to spermatc worms; and the want of probability is common to both. Every hypothesis which admits of an infinite progression ought to be rejected not only as false, but as destitute of every vestige of probability; and, as both the vermicular and ovular systems suppose an infinite progression, they should be for ever banished from philosophical speculation, as well as from physiological discussion. These systems, he proceeds, are liable to another objection. In the ovular system, the first woman contained both male and female eggs. The male eggs could produce males only. But the female eggs must have contained millions of generations both of males and females. Hence every woman must have always possessed a certain number of eggs capable of being unfolded *in infinitum*, and another number, which could be unfolded once only, and could have no farther operation in the series of existence. The same observations are applicable to the vermicular system. Hence, he concludes, that there is not the smallest degree of probability in either hypothesis.

Another difficulty, continues our author, still remains. It arises from the resemblance of children sometimes to the father, sometimes to the mother, and sometimes to both, and from the evident mongrel characters discoverable in mules and other irregular productions. If the foetus originates from the spermatc worm of the father, how should the child resemble its mother? If the foetus pre-exists in the egg of the mother, how should the child resemble its father? And, if the spermatc worm of a horse, or the egg of a she-ass, be the origin of the foetus, how should the mule partake of the nature and figure of both the horse and ass?

The objections, our author continues, to the ovular system are not less important. If the foetus existed in the egg previous to inter-

course of the male and female, why is not the foetus seen in the egg previous to impregnation as distinctly as after it? Malpighius always found the foetus in eggs which had received impregnation, and, in unimpregnated eggs, he could discover nothing in the cicatrice but an unformed mole or mass. It is evident, therefore, that the foetus is never formed till the egg has been impregnated. Besides, we not only cannot discover the foetus in eggs before the intercourse of the sexes, but we have not been able to demonstrate the existence of eggs in viviparous animals. Those naturalists who imagine that the spermatic worm is a foetus inclosed in a coat, or covering, are at least ascertained of the existence of spermatic worms. But those who maintain that the foetus pre-exists in the egg, have no evidence of the existence of the egg itself; for the probability of their non-existence in viviparous animals amounts almost to a certainty. Though the supporters of the ovular system agree not as to what ought to be regarded as real eggs in female testicles, they all admit, however, that impregnation is accomplished in the testicles or ovaria. But they do not consider, that, if this really happened, most foetuses would be lodged in the abdomen, instead of the uterus? for, the superior extremity of the Fallopian tube being unconnected with the ovary, the supposed eggs would generally fall into the abdomen. This is well known to be a very rare phenomenon; and it is probable that it never happens but by some violent accident.

M. Mery, in the history of the Academy of Sciences, stated some objections to the egg-system of generation. This dextrous anatomist insists, with much propriety, that the vesicles found in the testicles of females are not eggs; that they adhere so firmly to the internal surface of the testicle, as not to admit of a natural separation; and that, though they could separate from the substance of the

the testicle, it was impossible for them to escape from it, because the texture of the common membrane which incloses the whole testicle is so strong, that no man can conceive the possibility of its being pierced by a vesicle or gelatinous egg. As most anatomists and physicians were prepossessed in favour of the egg-system, and imagined that the number of cicatrices in the ovaria corresponded with the number of foetuses, M. Mery demonstrated such a quantity of these cicatrices in the testicles of a woman, as, upon the supposition of the truth of this system, would have implied a fecundity beyond all the powers of credibility. Other anatomists of the Academy, stimulated by these difficulties, made new researches. M. Duverney examined the testicles of cows and sheep, and maintained, that the vesicles were eggs, because some of them adhered to the testicles less firmly than others; and he supposed that they separated entirely when they arrived at maturity. M. Mery replied, that this reasoning was not satisfactory, because these vesicles were never seen separate from the testicles. M. Duverney observed the glandular bodies upon the testicles. He, however, never regarded them as parts essential to generation, but as accidental excrescences, like gall-nuts on the leaves of the oak. M. Littré, whose prejudices were equally strong in favour of the egg-system, maintains, not only that the vesicles are eggs, but assures us, that he discovered in one of them a well-formed foetus, of which he could distinguish both the head and the trunk; and he has even ventured to give their dimensions. From his own description, however, it appears that the uterus was schirrous, that the testicle was very much corrupted; and that the vesicle, or egg, which contained this pretended foetus, was smaller than usual, &c.

We are told by Nuek, that he opened a bitch three days after copulation; that he drew out one of the horns of the uterus, and tied it

it in the middle, to prevent all communication with the superior and inferior parts of the Fallopian tube. He then replaced the horn of the uterus, and closed the wound. In twenty-four days afterwards, he again opened the wound, and found two foetuses in the superior part of the tube, that is, between the testicles and the ligature; and no foetus was to be seen in the under part. In the other horn of the uterus, upon which there was no ligature, he found three foetuses. This fact proves, says he, that the foetus does not originate from the male semen, but that it exists in the egg of the female. This experiment is single; but, though it had been often repeated, and followed with the same event, the conclusion drawn from it is illegitimate. It proves no more than that a foetus may be formed in the superior as well as in the inferior part of the horn of the uterus.

I have now laid before the reader a short historical account of the theories and observations of the most respectable authors, both ancient and more modern, who have written upon the important, but obscure subject of the multiplication and succession of animated beings. I shall, therefore, proceed to give the ideas of some of our contemporaries.

§ 9.—BUFFON'S experiments and reasonings on the nature of generation merit attention. They are ingenious; but the reader must judge of their solidity. He alleges that all animals and vegetables are composed of an infinite assemblage of germs or organic living particles, which require only to be placed in certain circumstances in order to produce an animal or vegetable of the same species. These germs, or organic living corpuscles, are all of a similar figure and nature. In the same manner, salts, and some other mineral substances, are composed. A grain of sea-salt is a cube consisting of an infinite
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number of smaller cubes, and these still more minute, till, perhaps, we arrive at the primitive or constituent elements, which no glasses, nor any other human invention, can ever bring within the reach of our senses. In the universe, our author remarks, the number of these living organized corpuscles is infinite. Their constitutional substance is precisely the same with that of those organized bodies we see in Nature. For example, there is a vast profusion of organic corpuscles similar to the animals with which we are acquainted. A combination of these forms an animal, in the same manner as a combination of small cubes forms a grain of salt, or the combination of a number of vegetable corpuscles produce a tree or a plant. But it is necessary to break down, or dissolve, a grain of salt before we can discover the corpuscles of which it is composed. The parts of a plant, or of an animal must, in the same manner, be separated, in order to discover, by means of vegetation or developement, the small particles which enter into their composition. Every animal and vegetable substance is only a congeries of smaller animals and vegetables, though we are unable to make the division. Hence, our author remarks, there exists in Nature multitudes of minute organized bodies similar to the large organic beings which are exhibited in the world. These small beings, again, are composed of organic particles, which are common to animal and vegetable substances, give rise to every part of organic matter, and are primitive and indistructible. An assemblage of these particles forms an organized body. Hence generation, or reproduction, is only a change of form occasioned by the accumulation of similar particles ; and death, or dissolution, is only a division of this compound into its original and constituent parts.

. In this manner, continues our author, seeds produce young trees, which formerly existed in miniature in their own substance. During
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the first year, at the top of the stems or trunks of trees, a small bud appears, which contains a stem to be unfolded in the second year. The same process goes on annually with regard to the branches and leaves. Hence, he concludes, that the whole plant is an assemblage of similar organic bodies. The more perfect and the more complex animals are, their reproduction is the more difficult, and their progeny the less numerous. During the growth of the body, all the organic particles extracted from food are totally absorbed, and applied to augment the parts. For this reason, children are incapable of multiplying their species. But, when growth is nearly completed, the superfluous molecules, or organic particles, are transmitted from all parts of the body to the testicles and seminal vessels, the reservoirs appointed for them by Nature. At this period, the symptoms of puberty first begin to appear. These particles, our author remarks, do not unite in the testes to form embryos. To accomplish this effect, a mixture of those belonging both to the male and female is indispensable for the purposes of generation. When there are more male than female organic particles, the result is a male, and *vice versa*. What determines these organic particles to come from all parts of the body, and to rendezvous in the testes? M. de Buffon answers, because the organic particles are no longer able to penetrate the parts themselves; they are rejected, and, of course, unite together by the same active force which formerly gave them the power of penetrating the different members of the body when in a more flaccid and ductile state. In the course of circulation, every part attracts the particles which are most analogous to itself. After growth is completed, all the parts become more dense; and, though the blood, as usual, makes them an offer of organic particles, they are incapable of receiving them. The organic particles, therefore, being rejected by these parts of the body which formerly absorbed them

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with avidity, are obliged to assemble in the testes, which are reservoirs prepared by Nature for their reception.

Buffon made a great variety of experiments on the semen of different animals, which he diligently examined with the microscope. The moving bodies in the semen, which Leuwenhoek, and indeed every man who chose to view them, concluded to be animalcules, Buffon, in order, it should appear, to destroy the homuncular system, and to establish a new one of his own, denies to be *animals*. He gives them, however, the appellation of *corps organiques vivans*, or *living organic bodies*. This may be a *distinction*; but we shall leave the reader to find out the *difference*. From these experiments our ingenious author reasons in the following manner.

All animals, he remarks, are nourished either by vegetable substances, or by other animals who feed upon vegetables. Hence there exists in Nature a matter common to both, which serves for the growth and nourishment of every thing that lives or vegetates. This matter effectuates growth and nourishment by assimilating itself to every part of the animal or vegetable, and by intimately penetrating the texture and *form* of these parts, which, says he, I have distinguished by the appellation of an *internal mould*. When the quantity of this nutritive matter is more than sufficient for the growth and expansion of the animal or vegetable, it is detached from all parts of the body, and deposited in one or several reservoirs, under the form of a fluid. This fluid contains all those particles which are analogous to the various parts of the body, and, of course, every thing necessary for the production, in miniature, of a being perfectly similar to the first. This superfluity of nutritive matter

does not take place, in most animals, till they have nearly acquired their full growth ; for this reason, animals are not capable of multiplying their species before this period. When this nutritive and prolific matter, which is diffused through all nature, passes through the internal mould of an animal or vegetable, and finds a proper matrix or receptacle, it gives rise to an animal or vegetable of the same species. But, continues our author, when this prolific matter does not find a proper matrix, it produces organized beings totally different from *animals* or *vegetables*, as the *moving* and *vegetating* bodies which appear in the seminal fluids of animals, and in the infusions of vegetable substances *. If this reasoning is not *absurd*, I know not the meaning of the *word*. This prolific matter is composed of organic particles, which are always active. Their motions are stopped or arrested by the brute parts of matter in general, and particularly by saline and oily substances ; but, whenever they are disengaged from these substances, they resume their activity and produce different species of animals and vegetables. The spermatic animals may be seen, by the assistance of the microscope, in the seminal fluids of both male and female animals. The semen of viviparous females is filtrated through the glandular bodies which grow upon their testicles ; and these glandular bodies contain, in their cavities, a considerable quantity of seminal fluid. Oviparous females have a seminal fluid which is still more active than that of the viviparous. The semen of the female is similar to that of the male. They decompose in the same manner ; they contain similar organic particles ; and they exhibit the same appearances.

Of this organic and prolific matter, all animal and vegetable substances contain a great quantity. To discover its existence, we have
only

* Transf. of Buff. Vol. II. p. 347.

only to separate it from the brute matter in which it is entangled, by infusing animal or vegetable substances in water : The salts dissolve ; the oils separate ; and the organic particles are perceived by their movements. They are more numerous and active in the semen, than in any other animal fluids. After flesh has been infused for a short time in water, the organic matter appears under the form of moving bodies, which are nearly as large as those in the seminal fluid. But, after the infusion has been longer continued, the size of the organic particles is diminished, and their motion is augmented ; and, when the flesh is entirely decomposed or corrupted, the organic particles are extremely minute, and their motions are inconceivably rapid. When large quantities of this organic and prolific matter are collected in any part of an animal body where the matter is forced to remain, it there forms *living beings*, which we have always regarded as *real animals* ! The taenia, the ascarides, all the worms found in the veins, in the liver, in wounds, in pus, and most of those which are formed in putrified flesh, have no other origin. The eels in paste, in vinegar, and all the pretended, our author observes, microscopic animals, are only different forms assumed, according to circumstances, by this active matter, which has a perpetual tendency to organization.

In infusions of all animal and vegetable substances, this prolific matter first appears under the form of a kind of vegetation. We see it shoot into filaments, which grow and expand like plants. Their extremities and joints afterwards swell and burst, to give passage to a multitude of moving bodies, which have some resemblance to animals. Nature, it should appear, commences all her operations by a kind of vegetable motion : This motion we perceive in a variety of microscopic objects, and in the expansion of the animal em-

bryo ; for, at first, a foetus possesses only a species of vegetable growth or motion. Sound food furnishes none of these moving particles : Fresh meat, grain, fruits, &c. require to be infused some days before they exhibit any of these moving bodies. The more any substance is corrupted, decomposed, or exalted, as pus, blighted grain, seminal fluids, &c. the moving bodies the sooner make their appearance. In seminal fluids, they are entirely disengaged from other matter ; and a few hours infusion only is necessary to discover them in pus, corrupted grain, strong drugs, &c.

From these and similar facts, our author infers the existence of an organic animated matter, universally diffused through all animal and vegetable substances, and which equally serves for their nourishment, their growth, and their reproduction. Nutrition, he says, is effected by the intimate penetration of this matter through every part of animal and vegetable bodies ; expansion, or growth, is only a more extensive species of nutrition, which proceeds as long as the parts are ductile, and capable of being stretched ; and reproduction is an effect of the same matter, when it superabounds in the body of an animal or vegetable. Every part of organized bodies sends off to proper reservoirs all the organic particles which are superfluous for its nourishment. These particles are perfectly similar to the different parts from which they proceed, because they were destined for the nourishment of those parts. . When the whole particles sent off from every part of the body are assembled, they must necessarily form a small body similar to the original, because every particle is similar to the part from which it was detached. In this manner, every species of reproduction, where one individual only is requisite, as that of trees, plants, polypi, vine-fretters, &c. is effected. This is also the first method employed by Nature for the reproduction

tion of such animals as require the aid of different sexes ; for the seminal fluid of each sex contains all the particles necessary for reproduction : But, among the larger animals, the mixture of both fluids, in a place suited to the expansion and growth of the foetus, is requisite ; and this place is the uterus of the female.

After reasoning in this manner, from the facts enumerated by him, M. de Buffon draws the following conclusions : There are, therefore, says he, no pre-existing germs, or germs contained infinitely within each other. But there is an organic matter diffused through all animated nature, which is always active, and has a perpetual tendency to form, to assimilate, and to produce beings similar to those into which it enters. Hence the species of animals and of vegetables can never be exhausted : As long as individuals subsist, the different species will be constantly kept up ; they are the same now that they were three thousand years ago. By their own powers they will perpetually exist, unless they be annihilated by the will of their Great CREATOR..

§ 10.—We shall now proceed to the theory of the ingenious C. BONNET. In his *Considerations sur les Corps Organisés*, Bonnet supposes that germs, or buds, exist in the uterus of the female, and contain the matter or rudiments of the foetus ; and that the impregnation of the male has no other effect than that of putting these germs in a condition proper for their evolution and growth. The animalcular system, our author remarks, makes the germs, or rudiments of animals, reside in the spermatic animalcules, and the uterus affords only a convenient nidus for bestowing the warmth and nourishment necessary for the evolution of the parts. The existence
of

of these animalcules in females seems to destroy this hypothesis, unless it should be supposed that they copulate and produce a third being, which becomes the rudiments of a fœtus, or that they unite in numbers to compose a large homogeneous mass. The farina of plants, and the semen of animals, are the nutritive particles destined by Nature for the growth and evolution of the original germs. Bonnet supposes that the germs, whether male, female, or neuter, as in bees, exist previously in the ovaria of the mother, and that the male semen only cherishes and unfolds what formerly existed.

Bonnet endeavours to obviate some difficulties to which his theory gives rise. For example, why should mules resemble both species from which they proceed? These resemblances, he observes, are seldom uniform, or take place in the same parts. It has, however, been remarked, that, in general, the body of a mule resembles the female more than the male; but that the extremities have a greater resemblance to those of the male. On this branch of the subject, he confines himself chiefly to resemblances in colour, which, he thinks, are easily accounted for by regarding the semen as a nutritious fluid. We know, says he, that the quality of the aliment has a great influence on the colour of organized bodies. By feeding on madder, the bones of fowls, and of other animals, are soon changed into a red colour. * We can vary the shades of plants by making them absorb different fluids of different colours.

But, he proceeds, it may be said, that the colours impressed on the germ by the seminal fluid should alter gradually, and at last vanish entirely. To remove this difficulty, our author replies, that the reflection of particular colours depends on the nature and texture of the parts; when these are determined, it is very probable that

that the colours remain, and that the nutritious particles conveyed to these parts receive the same tinges. A germ he defines to be the rudiment or sketch of an organized body. This idea, he confesses, is not sufficiently clear. But, he remarks, that we must either attempt a mechanical explanation of the mode in which organs are formed, which exceeds all human powers, or we must admit that the germ actually contains in miniature all the parts essential to the animal. The principal difference, then, between a germ and a real animal is, that the germ is composed solely of elementary particles, and that the texture formed by these particles is extremely condensed; but that, in the animal, the elementary particles, by means of nutrition, are associated with an infinity of other particles. The variety which takes place in all parts of animals, whether with regard to their proportions or consistence, shows that the same variety exists in the elements from which they originated. The degree of extension in the different parts is proportioned to the power by which they were produced. This power, in the present subject, is the feminal or nourishing fluid.

To these general reflections, our author proceeds, I shall add some particular conjectures. 1. I suppose, says he, that, in the feminal fluid, the same species of elements exist as enter into the composition of the germ. 2. That elements of the same kind have a greater disposition to union, than those of a different nature. 3. That the texture, or tissue, of each part bears a certain proportion to the relative particles of the semen. 4. That the efficacy of the feminal liquor depends on the degree of its heat and motion, and on the number of the different kinds of elementary particles it contains. Upon these supposed principles, he remarks, the generation of mules by the junction of the ass and mare may, in a certain degree,

gree, be explained. This production, says he, formerly existed in the ovaria of the mare under the form of a horse. But how should this horse undergo such a change? From whence proceed these long ears? Why is the tail furnished so scantily with hair? To these questions, he replies, that, though the elements of the seminal fluid of the ass correspond, in general, with those of the germ, it contains a proportionally greater number of particles suited to unfold the ears. On the other hand, it has fewer particles necessary for expanding the tail.

SECT.

S E C T. III.

Of Singularities in the Mode of Multiplying among certain Animals.

IN the first volume of this work, I have enumerated so many examples of the multiplication of animals, without the intervention of two sexes, which, though strictly connected with this subject, it is unnecessary to repeat; and, therefore, must refer the reader to a perusal of that part of the book where those examples are to be found*.

VOL. II.

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SECT.

* Phil. of Nat. Hist. Vol. I. p. 30. &c.

S E C T. IV.

Of Partial Reproduction—Some Animals, from peculiarities in their constitutions, have the power of reproducing parts of their bodies which have been lopped off—Supposed causes of this surprising faculty.

IN the more perfect animals, as man, quadrupeds, birds, &c. whose multiplication is regulated by general and similar laws. if any member or part of their bodies is destroyed, it is impossible, it should appear, for either art, or Nature herself, to repair the loss. But, in some inferior animals, whose texture is more ductile, though deprived, by force or by accident, of particular members of their bodies, their constitutions have the power of reproducing the lost parts, and of restoring them to their originally perfect state; and, in some instances, when the body of an animal is divided, it gives rise to as many individuals as there are divisions, as in the polypus, &c.

The earth-worm, when cut into two or more portions, does not die. On the contrary, when the different portions are placed in proper circumstances, each of them gradually becomes a perfect animal. BONNET informs us, that he cut a worm of this kind into two equal parts on the 27th day of July; and that, on the 15th of August, he perceived, at the posterior part of the insect to which the

head was attached, a slender vermicular appendage, about eight or nine lines in length. Its colour was brighter than the rest of the body. It had the appearance of a small worm proceeding from the extremity of the larger. This appendage, or rather this new posterior part, was highly organized. It was composed of a succession of very close rings, upon the sides of which the *stigmata*, or apertures destined for the purposes of respiration, were perceptible. What was still more curious, the great artery, or that vessel which, in insects, performs the functions of the heart, was apparent. In this artery, from the one extremity of it to the other, the alternate motions, called *systole* and *diastole*, were perfectly evident. The circulation of the blood in this new production, in the same manner as in the rest of the body, proceeded from the posterior to the anterior extremity. In earth-worms, the blood is of a fine red colour, which gave M. BONNET an opportunity of distinguishing easily its motion and direction. At the end of a month and a half, from the operation, this new posterior part, which at first was so slender, had acquired a thickness almost equal to that of the rest of the body, and it had grown proportionally in length. Its colour was deeper, and the new intestines were full of earth, which is the food of that species of insects. After what I have related, says BONNET, it must be acknowledged, that the earth-worm has the faculty of reproducing parts of its body after they have been cut off. The posterior part, though lively and active at the end of nine months, showed no symptoms of reproduction. After so long an abstinence, it at last perished for want of food.

With a view to observe more particularly the reproduction of the anterior part, BONNET cut from an earth-worm the head and several rings. This experiment was begun about the end of July. Toward

ward the middle of August, the wound was perfectly cicatrised; but no marks of reproduction appeared. The wound was circumscribed by a pretty elevated border formed by the old flesh, and made a kind of hollow in the middle resembling a small basin. In a few days more, he observed, in the centre of this depression, a white point, which, by gradually increasing, assumed the form of a small bud. On the twentieth day of September, this bud was lengthened, and terminated in a soft point. On the second day of October, it was still longer, and had assumed the appearance of a small worm, which issued from the middle of the cicatrice. In the months of November and December, the new part continued to lengthen, and to grow proportionally thick. The death of the insect put an end to farther observations. BONNET remarked similar appearances in earth-worms which had been divided into three, four, and five portions. From the intermediate portions, both an anterior and posterior part began to shoot at the same time. But the progress of the former, in equal times, was much greater than that of the latter. When the posterior part had acquired three lines in length, the anterior part appeared only under the form of a small bud; and, when the anterior part was between two and three lines long, the posterior was at least six lines, or half an inch. All these sections of worms, however, died without reproducing a complete anterior part.

BONNET made similar experiments on certain species of worms which live in fresh waters. They afford an example of a much more rapid reproduction than can be obtained from the earth-worm. Sections of these worms, in a few days, become complete animals. The anterior part ceases to grow as soon as it has acquired the length of a line, or a line and a half. The posterior part, on the contrary, sometimes stretches out to the length of several inches. Portions,

even

even cut from the middle of the body, reproduce a new head and a new tail. Another species of fresh-water worm is of a whitish or ash colour. It is remarkable, that, when BONNET cut transversely the body of this worm into two or several portions, each portion, at its anterior extremity, reproduced a tail instead of a head. This tail, as might be suspected, was not a head more than commonly slender. It was a well-formed tail, in which the anus was distinctly visible. This reproduced part, the worm did not use either for the purposes of moving or of taking food. It only made vibrations occasionally from right to left, but without the smallest attempt to progressive motion. It is remarkable, that in this tail, instead of a head, the circulation of the blood did not change its direction, but continued, as usual, to move from the posterior to the anterior part of the body. It is still more remarkable, that the sections of these worms, which reproduce a tail instead of a head, never receive any nourishment. Their stomach and intestines, though the anomalous creatures sometimes lived seven months, were always transparent, and never contained any food.

But these instances of reproduction are confined to very small animals. I now give an example of regeneration of parts lopped off in an animal prodigiously large, when compared with the polypus, or the fresh-water worms, formerly described.

Long before the history of the polypus was known, philosophers admired the reproduction of the claws of the cray-fish, a species of lobster. But no person has traced the progress and circumstances attending this reproduction with equal exactness and sagacity as the celebrated M. DE REAUMUR*.

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* Mem. de l'Acad. Royale des Sciences, anno 1712.

The claws of the cray-fish, reckoning from the end of the pincher, consist of five articulations, at the fourth of which the claw breaks most frequently, and here it is also most easily reproduced. When the claw, whether by accident or design, has been broken at or near this articulation, the part which remains attached to the body exhibits a round shelly opening or tube. This tube is occupied entirely with a fleshy substance. In a day or two, especially if the experiment is made in summer, a red membrane, like a piece of cloth, shuts up the aperture. This membrane is at first plain; but, in four or five days, it assumes a convexity, which gradually augments, till it takes the appearance of a small cone, which exceeds not a line in height. It continues, however, to stretch out; and, in ten days, it is sometimes more than three lines, or about a quarter of an inch, high. It is not hollow, but filled with flesh, and this flesh is the basis or rudiments of a new claw. The membrane which covers the flesh performs the same office to the young claw as the membranes do to the foetus of the larger animals. It extends in proportion as the animal grows; and, as it is pretty thick, we can perceive nothing but a lengthened cone. When fifteen days are elapsed, this cone inclines toward the head of the animal. In a few days more, its curvature increases, and it begins to assume the appearance of a dead claw. This claw, though, at the end of a month or five weeks, it has acquired the length of six or seven lines, which is more than half an inch, is still incapable of action. The membrane in which it is inclosed becoming gradually thinner in proportion as it extends, gives an opportunity of observing the parts of the claw, and we now perceive that this conical substance is not a simple congeries of flesh. The moment is now arrived when the claw begins to be brought forth. The membrane at last bursts, and the new claw, though still soft, appears without incumbrance or investment. In a few days more,

more, it is covered with a shell, and, though still delicate, and not the half of its former length, it performed all its natural functions. It has likewise been discovered, that, whether the claw has been lopped off at the fourth articulation, or any where else, the animal, in a short time, recovers all that it had lost. The same reproduction takes place in the claws and in the horns ; but, what is singular, if the tail is cut off, the animal survives a few days only.

To account for these and similar reproductions, BONNET has recourse to his favourite hypothesis of pre-existing germs. When the claws of the cray-fish, or the parts of certain insects, are cut off from their bodies, he says, that the germs or buds of these parts still remain, and require nothing but time and proper circumstances to unfold and to restore the parts which had been lost.

BONNET's theory is ingenious, and his knowledge of Nature is extensive. Still, however, I am afraid, that, notwithstanding his great talents and industry, he has related the facts only, without being able to ascertain, or to explain in a satisfactory manner, the causes by which they are produced. An infinite series of germs, all capable of either giving rise to entire animals, or of restoring the lost parts of animals, seems to be an incomprehensible idea, and adds nothing to our knowledge of the operations of Nature. How she acts, in these and similar circumstances, we never, it should appear, can either discover or comprehend.

S E C T. V.

General Reflections and Observations.—Supposed Effects of the Imagination upon pregnant Animals.

I HAVE now given an historical account of this most intricate subject, which has occupied the attention of great and learned men both in antient times and in our own. Before concluding, I must, however, be indulged with a few remarks.

The mode employed by Nature for multiplying animals, by the commixture of sexes, though investigated with anxiety by ingenious men for many ages, is still, and must for ever remain a mystery. I shall not disturb my readers with particular remarks upon the various theories of which I have given abridged, but, I hope, satisfactory views. Much must be left to their own reflection. It may, however, be observed, upon the whole, that great labour and great ingenuity have been exerted in order to elucidate a subject so interesting, and so calculated to excite the curiosity of beings endowed with any considerable portion of rational powers.

The most plausible theories are those of HARVEY, LEUWENHOEK, and BUFFON.

HARVEY's idea of eggs is ingenious, and founded on a strong analogy. But the facts he produces seem not sufficient to support the hypothesis he has adopted. If we reflect on oviparous animals, from the humming-bird to the largest of the feathered tribes, we shall perceive that the eggs bear some proportion to the magnitude of the animal which gives birth to them. But in man and the larger quadrupeds, what HARVEY, and many other writers of reputation, have chosen to denominate *eggs* in their ovaria, are almost infinitely disproportioned, by their minuteness, to the magnitude of the animals which are supposed to proceed from them. An elephant, or even a human being, produced from an *egg* not so large as a *pea*, requires a degree of faith that few men possess. Here the analogy between real oviparous animals and the larger quadrupeds seems too distant, and even too ridiculous, to obtain general credit. Besides, how is this egg, after impregnation, to enter the Fallopian tube, and be, through this channel, conveyed into the uterus? The Fallopian tubes have no immediate connection with the ovaria. But we are told, that, in the moment of impregnation, the *fimbriae*, or fringed mouths, of the Fallopian tubes, embrace the ovaria, swallow an egg, and transmit it to the uterus, where it is cherished, hatches, and, in proper time, produces a living animal! Whoever is capable, after considering the structure of the parts, of believing this strange process, seems to have more faith than is necessary to constitute a good Muffelman.

LEUWENHOEK's vermicular theory is still more complicated, and less intelligible. That anima'cules, or moving bodies, really appear, by the assistance of the microscope, in the semen of animals, is an incontestible fact. But our author considers these moving bodies as real animals, according to the species, which require only a proper

nidus

nidus for their growth and perfection of their parts. LEUWENHOEK supposes that, when one of these animalcules gets admittance to the uterus, its parts, which formerly existed, are gradually unfolded till at last it becomes an animal completely fitted to see the light, and to perform the various functions of life. He tells us, that, in the semen of some species, millions of animalcules are not equal in bulk to a grain of sand, and that, in others, many millions of them would not make the thickness of a hair. In the seeds of plants, Nature, for many obvious reasons, is very profuse. But, in the animal kingdom, no such reasons exist. In one impregnation, according to LEUWENHOEK's hypothesis, millions of animated beings perish, when one only has the good fortune to survive. What are the devastations of all the hostile armies since the creation of the world, when compared to this immense waste of animals, even in the life of a single man, or rather in the impregnation of a single female?

The idea of animalcules existing in the semen of males, and of afterwards becoming perfect animals, does not in the smallest degree advance our knowledge of the multiplication of species. The question still recurs. What gives rise to these animalcules? How are they produced? Do they consist of males and females? Supposing they did, they would only multiply their own number, from which nothing farther, in the ordinary course of nature, could possibly proceed. With regard to this vermicular hypothesis, it shall only be remarked, that if the spermatic worms of men were the rudiments of real human beings, which required only a proper situation for having their parts expanded, why should myriads of them be destroyed, and only a favoured one be selected, and at last brought to perfection? Animation, particularly in the human species, implies a soul, or a thinking principle. What, it may be asked, becomes of

those millions of souls which are daily, to us at least, lost? Are they annihilated? If so, why create such superfluous multitudes for no other seeming purpose but to hurry them prematurely out of existence? The reader, I imagine, is now completely tired of this ridiculous *worm-theory* of generation, I shall, therefore, make a few remarks upon that of my late learned, respected, and most ingenious friend and correspondent, the COUNT DE BUFFON.

This illustrious author, fully persuaded that the notion of those moving atoms, discernible in the semen, being real animals was absurd, adopts an hypothesis, which, though apparently different, amounts nearly to the same thing. To what LEUWENHOEK and others call *animalcules*, BUFFON, by a circumlocution, gives the denomination of *corps organiques vivantes*. These moving particles, he says, have a constant tendency to unite, and to form larger animated bodies of a similar nature. The only difference between LEUWENHOEK'S *worms*, and BUFFON'S *living organic particles*, seems to be this: The former makes a single *worm*, or *homunculus*, sufficient to produce a perfect animal. The latter takes a wider range, and supposes a numerous congeries of them necessary to accomplish the same end. The idea, that a number of *living* organic bodies should unite, and form only *one living* organized body, seems to be very remote from any known analogy; and no man will pretend to demonstrate the supposed fact.

Whoever peruses these sketches of the various theories of the generation of animals which have hitherto been invented, will probably require no other arguments to convince him that philosophers and physicians are still as ignorant of this mysterious process of Nature as they were in the days of HOMER.

Sup-

Supposed Effects of the Imagination upon pregnant Animals.

THIS branch of the subject, to some readers, may seem too contemptible and too ridiculous to be treated of in a serious manner. But it is the duty of philosophers to remove prejudices, and especially such as are really hurtful to mankind. In this country, at least, there is not a deeper rooted prejudice than that strawberries, fruit of any kind, a mouse, &c. when thrown at a pregnant woman, produce, by means of her imagination, or apprehension, marks similar to these objects in the part of the foetus corresponding to that on which the mother was struck. These marks are even supposed to be transferable from one part of the body to another. For example, when any thing is thrown at a pregnant woman, either by accident or design, if she instantly puts her hand on her hip, this action, it is firmly believed, transfers the mark to that part of the child's body, and prevents the more exposed parts, as the face and hands, from being deformed.

But the supposed effects of imagination upon the foetus are not confined to substances thrown at the mother. Fear, love, or any strong desire, are said to produce derangements in the foetus. For this reason, pregnant women are carefully prevented from seeing negroes, apes, or any other animal that may create terror or surprize. We are told that a woman in Paris, who happened to be with child when she saw a criminal broken upon the wheel, was so struck with the dreadful spectacle, that the bones of the infant she afterwards produced were precisely in the same condition with those of the unfortunate sufferer. Similar effects are apprehended when a woman, in this condition, has a strong desire to eat particular fruits,

or

or is affected with any other appetite which, at the time, cannot be gratified.

That pregnant women, agitated by any violent passion, placed in dangerous situations, or frightened by some ferocious animal, should occasionally produce deformed or even maimed children, is by no means impossible. Between the mother and the fœtus the connection is so intimate, that a violent agitation in the spirits and blood of the former may be communicated to the latter, and give rise to disorders which the parts of the mother are able to repel, but to which the more delicate texture of the fœtus must yield. We daily perceive involuntary motions extended to much greater distances than from the mother to the child in her womb. When a man walking before us makes a false step, we assume naturally that position of our bodies which he should take, in order to prevent himself from falling. We cannot see other men suffer, without feeling a part of their pain. This is the bond by which Nature attaches mankind to each other. Pleasure and pain are the two masters of this world. Without the one, few animals would take the trouble of continuing the species: If we had no dread of the other, many men would not chuse to protract their existence.

But the effects of terror must not be confounded with those commonly supposed to be produced by a slight and momentary imagination of the mother. Terror may occasion great derangements in the soft texture of a fœtus; but these derangements have no resemblance to the objects by which they are produced. It is much more probable, that the terror occasioned by a tiger, or other rapacious animal, should produce the death of the child, or great derangements in its parts, than that the same terror should give rise to spots and
claws

claws resembling those of the tiger. Besides, an infant brought forth with its bones broken as if upon the wheel, would not be so surprising, as the mark of a cherry proceeding from no other source than because the mother wished to eat a cherry. Nothing, however, is more common than marks which are supposed to derive their origin from the longings of the mother. A mark of this kind is sometimes called a *cherry*, sometimes a *raisin*, and sometimes a *fish*! After examining a number of these marks, M. MAUPERTUIS acknowledges, that he never saw one which could not easily be reduced to some excrescence, or to some accidental blotch on the skin*. The relation of mothers, that they remembered, during their pregnancy, to have had certain fears or desires, merits but little attention; for they never recollect to have had these fears or desires till they have brought forth a child with some uncommon mark on its body. Their memory then supplies them with whatever they want. If the mark has some fancied resemblance to a fruit or to an animal, they instantly recollect, that they longed for the one, or were frightened by the other. It is not indeed wonderful, or rather it is highly probable, that, in the course of nine months, any woman, whether pregnant or not, should be afraid of some animal, or have a desire to eat a particular kind of fruit.

In these supposed effects of imagination, it may be asked, Why are not the impressions, and often cruel ones, of the whip, seen upon the offspring of mares, and she-asses? It may, perhaps, be alleged that the inferior animals have no imagination. No person however, who observes the œconomy of the most common quadrupeds can entertain a doubt that they are possessed of this power; but they have not the folly to exercise it in a manner so absurd. A

mare,

* Oeuvres de Maupertuis, Tom. II. p. 78. 79. Art. Venus Physique.

mare, a she-afs, or a cow, though hunger often obliges them to long violently for particular kinds of food ; yet their offspring never exhibit marks of grafs, of hay, of cabbages, or of turnips.

I fhall conclude this fubject with a few obfervations, the principal intention of which is to remove the prejudices juft mentioned, and, of courfe, to prevent, if poffible, the apprehenfions of females arifing from imaginary, but often hurtful, caufes. Though the human fœtus is, in fome meafure, equally independent of the mother, as the egg is independent of the hen by which it is covered ; yet, it is afferted that, whatever affects the mother produces a fimilar effect upon the fœtus, and that the impreffions received by the one are communicated to the other. To this imaginary influence all thofe refemblances, and marks, which appear on the fkin of particular children, have been attributed. ‘ Many of thefe marks,’ fays the COUNT DE BUFFON *, ‘ I have examined, and they uniformly appeared to be occafioned only by a derangement in the texture of the fkin. Every mark muft neceffarily have a faint refemblance to fomething or other : But fuch refemblances, I am perfuaded, depend more on the imagination of thofe who fee them, than upon that of the mother. On this fubject, the marvellous has been pushed to an extreme degree. The fœtus has not only been faid to bear the real representations of the appetites of the mother, but that, by a fingular fympathy, the marks which represent ftrawberries, cherries, &c. affume a deeper colour during the feafon of thefe fruits. A little attention, however, will convince us, that thefe changes of colour are more frequent, and that they happen whenever the motion of the blood is accelerated, whether it be occafioned by the heat of fummer, or by any other caufe. The

‘ marks

* Translat. Vol. II. p. 330.

‘ marks are always either yellow, or red, or black; because the
‘ blood gives these colours to the skin when it enters in too great
‘ quantities into the vessels. If these marks were occasioned by the
‘ appetites of the mother, why are not their forms and colours as
‘ various as the objects of her desires? What a multitude of strange
‘ figures would be exhibited, if all the whimsical longings of a mo-
‘ ther were written on the skin of the child? As our sensations
‘ have no resemblance to the objects which excite them, it is im-
‘ possible that desire, fear, horror, or any other passion or emotion,
‘ can produce real representations of the objects by which they are
‘ occasioned. An infant being, in this respect, equally independent
‘ of the mother as the egg is independent of the hen that sits upon
‘ it, I should be equally induced to believe, that the imagination of
‘ a hen, which saw by accident a cock’s neck twisted, should pro-
‘ duce wry-necked chickens from the eggs she was hatching, as that
‘ a woman, who saw a man broke upon the wheel, should produce,
‘ by the mere force of imagination, a child with all its limbs
‘ broken.’

Even if this last fact were well ascertained, it could never be occasioned by the imagination of the mother. What is the effect of horror? An internal movement, or perhaps a convulsion of the mother’s body, which might alternately compress and dilate the uterus. What would be the consequence of such a commotion? Nothing, surely, similar to its cause: For, if the commotion was very violent, the foetus might have some of its parts deranged, or even its life might be extinguished. But, is it possible to believe that this agitation should produce in the foetus any thing similar to the thoughts or feelings of the mother? Among the infinite combinations of which Nature is capable of forming, that arrangements, both in animated

and inanimated beings, of peculiar and extraordinary kinds should sometimes happen, is not an object of wonder. Of the numberless children, therefore, which daily come into the world, one may occasionally appear with two heads, with four legs, or with the bones of all its members broken, or rather not fully united. The fœtus, as formerly remarked, possesses nothing in common with the mother. Its organs, its functions, its blood, are all peculiar to itself. The only matter it derives from the mother is the nutritive lymph which is secreted by the uterus. If this lymph is any how vitiated, if it be tainted with the venereal virus, the fœtus receives the infection; and it is reasonable to think, that all diseases proceeding from vitiated humours may be communicated from the mother to the child. The small pox is often communicated in this manner; and we have too many examples of children, immediately after birth, becoming innocent victims of their parents debauchery.

We should not have dwelt so long upon this subject, were it not for an earnest desire to remove a hurtful, and sometimes a dangerous prejudice, to which women, even in the highest ranks of life, are unfortunately subjected. This prejudice, from whatever source it derived its origin, is very ancient. In the 30th chapter of Genesis, we find the following most curious passage, which is an interlocutory bargain between Laban and Jacob: ‘And it came to pass, when
 ‘ Rachael had born Joseph, that Jacob said unto Laban, send me
 ‘ away, that I may go into mine own place, and to my country.
 ‘ Give me my wives and my children, for whom I have served thee,
 ‘ and let me go; for thou knowest the service which I have done
 ‘ thee. And Laban said unto him, I pray thee, if I have found
 ‘ favour in thine eyes, tarry; for I have learned, by experience, that
 ‘ the Lord hath blessed me for thy sake. And he said, Appoint me
 ‘ my

‘ my wages, and I will give it. And he said unto him, Thou
‘ knowest how I have served thee, and how thy cattle was with me.
‘ For it was little which thou hadst before I came, and it is now in-
‘ creased into a multitude ; and the Lord hath blessed thee since my
‘ coming ; and now, when shall I provide for mine own house
‘ also ? And he said, What shall I give thee ? And Jacob said,
‘ Thou shalt not give me any thing ; if thou wilt do this thing for
‘ me, I will again keep and feed thy flock. I will pass through all
‘ thy flock to-day, removing from thence all the speckled and spot-
‘ ted cattle, and all the brown cattle among the sheep, and all the
‘ brown and the spotted and speckled among the goats, and of such
‘ shall be my hire. So shall my righteousness answer for me in
‘ time to come, when it shall come for my hire before thy face :
‘ Every one that is not speckled and spotted amongst the goats and
‘ brown amongst the sheep, that shalt be accounted stolen with me.
‘ And Laban said, Behold, I would it might be according to thy
‘ word. And he removed that day the he-goats, that were ring-
‘ straked and spotted, and all the she-goats that were speckled and
‘ spotted, and every one that had some white in it, and all the
‘ brown among the sheep, and gave them into the hands of his sons.
‘ And he set three days journey betwixt himself and Jacob : And
‘ Jacob fed the rest of Laban’s flock. And Jacob took him rods of
‘ green poplar, and of the hazel and chestnut tree ; and pilled white
‘ strakes in them ; and made the white appear which was in the
‘ rods. And he set the rods which he had pilled before the flocks
‘ in the gutters in the watering troughs, when the flocks came to
‘ drink ; that they should conceive when they came to drink. And
‘ the flocks conceived before the rods, and brought forth cattle ring-
‘ straked, speckled, and spotted. And Jacob did separate the lambs,
‘ and set the faces of the flocks toward the ring-straked, and all the

‘ brown in the flock of Laban ; and he put his own flocks by themselves ; and put them not unto Laban’s cattle. And it came to pass whensoever the stronger cattle did conceive, that Jacob laid the rods before the eyes of the cattle in the gutters, that they might conceive among the rods. But when the cattle were feeble, he put them not in ; so the feebler were Laban’s, and the stronger Jacob’s.’

We shall make no observations on this remarkable passage, but, after what has been formerly said on the subject, leave it entirely to the judgment of the reader.

CHAP.

CHAPTER III.

SECT. I.

Of Mules, or the anomalous productions of Nature—Mules sprung from the horse and ass not entirely unprolific—Of the Fumar, an animal supposed to be produced between the bull and mare—Different species of small birds unite, and their progeny retain the power of multiplication.

THE anomalous productions of Nature excite astonishment in the vulgar, and call forth the reasonings of the speculative. From the singularity of their appearances, and that love of oddity to which most men are addicted, it is natural to imagine, that this subject should have long ago been exhausted. But the conclusion, however plausible, is by no means just; for the production and oeconomy of mules have never obtained a philosophical discussion. Much has been written; many theories have been fabricated; but the number of experiments bear no proportion to the quantity of speculation. The maxim, That mules cannot perpetuate their kind, is established. But, like many other maxims, it has been rendered general, more from the indolence of mankind, than from their inquiry into the genuine operations of Nature.

The

The COUNT DE BUFFON, however, in a supplementary volume to his history of quadrupeds, has given a considerable degree of probability to the fertility of mules. He laments, that, in the production of them, few experiments have been made, and that even these have been confined to animals possessed of the weakest prolific powers. Some species have a natural antipathy to others. But, when managed with address, these antipathies may be removed. BUFFON endeavoured to procure a conjunction between the dog and the wolf: He failed in the attempt. But, in the year 1773, LE MARQUIS DE SPONTIN BEAUFORT succeeded. From a she-wolf and a mastive dog, he obtained four puppies at one litter *. These animals, who had been brought up in familiarity with each other, joined spontaneously. Instances are even recorded of mutual attachment between a dog and a sow, though their attempts were abortive †. The existence of the *jumar*, a production between a bull and a mare, or between a bull and a she-ass, though particularly described by ST LEGER, and some other writers, has not obtained general credit. But that a bull and a mare spontaneously joined, we have direct evidence from BUFFON ‡. ‘In the year 1767,’ says this ingenious author, ‘and some succeeding years, the miller at my estate of Buffon kept a mare and a bull in the same stable, who contracted such a passion for each other, that, as often as the mare came in season, the bull covered her three or four times every day. These embraces were repeated during several years, and gave the master of the animals great hopes of seeing their offspring: Nothing, however, resulted from them. All the inhabitants of the place were

‘witnesses

* Supplement a l’Hist. des Anim. Quadruped. par BUFFON, p. 9. 10. & seq. and Transf. vol. 8. p. 10.

† Supplement, &c. par BUFFON, p. 35. and Transf. vol. 8. p. 10.

‡ Transf. vol. 8. p. 37.

‘ witnesses to this fact, which proves, that, in our climate at least, the bull cannot procreate with the mare, and renders this kind of jumar extremely suspicious. I have not equal evidence to oppose to the second kind, which Dr SHAW says proceeds from the jack-afs and cow. I acknowledge, that, though the dissimilarities in structure appear to be nearly equal in both cases, the positive testimony of a traveller so well informed as Dr SHAW, seems to give a greater degree of probability to the existence of this second kind of jumar than we have for the first. With regard to the third jumar, proceeding from the bull and she-afs, I am persuaded, notwithstanding the authority of MEROLLE, that it has no more existence than the one supposed to be produced by the bull and mare. The nature of the bull is still farther removed from that of the she-afs, than from that of the mare : And the unfertility of the mare and bull, which is ascertained by the above examples, should apply with greater force to the union of the bull and afs.’

Some of the antients mention the fecundity of common mules. ARISTOTLE tells us, that the male coupled with the mare, and produced an animal called by the Greeks *binnus* or *ginnus* ; and that the female mule readily conceived, but seldom brought her offspring to perfection *. The same fact is mentioned by PLINY as recorded in the Roman Annals.

But BUFFON produces evidence of a less equivocal nature. M. DE BORY communicated to the COUNT DE BUFFON a certificate, attested by many credible witnesses, that, in the month of May 1769, a female mule brought forth a well formed-foal in the island of

St

* Arist. Hist Anim. lib. 6 c. 24.

St Domingo *. He adds, that, on account of a fall which happened to the mother, the foal was hurt, and died an hour after birth; and that its skin, according to his information, was transmitted to Dr MATTY, then secretary to the Royal Society of London †. M. DE BUFFON mentions several examples of the same kind from Spain and Italy, though he acknowledges that they are not so well attested as the former ‡. From these facts he concludes that hybrids, or mules, produced even from the most comparatively unprolific quadrupeds, are not absolutely barren.

M. DE BUFFON farther remarks, that ‘ mules never produce in cold climates, seldom in warm regions, and still more seldom in temperate countries§.’

The instances of prolific powers in mules, properly authenticated, are indeed few. But this circumstance is perhaps more owing to the prejudices and to the indolence of mankind than to the actual sterility of the animals. Even in our own country, we have lately had an instance of the prolific powers of a she-mule. She was impregnated spontaneously by a horse and produced a very strong foal. The animal, however, was allowed to perish from a superstitious notion, that it was an ominous monster, and would bring discredit to the farmer's cattle, as well as to those in his neighbourhood. This event happened in the county of Forfar, which is situated in the north of Scotland. Though I published an authenticated account of this uncommon fact in the eighth volume of my

Transf-

* Buffon, Supplem. à l'Hist. des Quadrup. p. 16, 17. and Translat. Vol. VIII. p. 15,

† Ibid. p. 18. and Translat. Vol. VIII. p. 16.

‡ Ibid. and Translat. Vol. VIII. p. 17.

§ Ibid. p. 19. and Translat. Vol. VIII. p. 18.

Translation of Buffon, it will not be improper, for the satisfaction of my readers, to subjoin, verbatim, the authentication in a note *.

Birds,

* Having heard that a mule, belonging to Mr David Tullo, farmer in Auchtertyre, in the county of Forfar, had, some years ago, brought forth a foal I transmitted a few queries to be put to Mr Tullo; and requested that his answers might be legally attested by a magistrate. This request was cheerfully complied with; and the following is an exact copy of the queries, answers, and attestations.

Interrogatories to be put to Mr Tullo, tenant in Auchtertyre, parish of Newtyle, and county of Forfar, with his answers thereto.

1mo, Had you ever a she-mule? At what period? Is it true that the mule had a foal? At what time was she covered; and when did she foal?

Answered by Mr Tullo: That he bought a she-mule about twenty years ago: That she was constantly in season for a horse: That, about some years thereafter, he gave her a horse; and that she, thereafter, gave him a foal about the 10th of June. The mule's price was four pounds five shillings Sterling.

2do, What was the colour of the foal? Was there any thing particular in its figure?

Answer: The foal was exactly the colour of its mother, inclined to black with a very large head, big ears, and small tail; and the declarant thinks, had its head been weighed when foaled, it would have weighed nearly as much as its body.

3tio, How long was the animal allowed to live?

Answer: The next day after the mule foaled, it was sent, with its mother, to the Loch of Lundie, in order to let the foal die, as the declarant could not want the mule's work, and the mother seemed not fond of the foal: That it was accordingly left, and next day came to Auchtertyre, about two miles distance, over a hill, with the cattle of Auchtertyre, that had been grazing near to that place, and was drowned in a ditch the day following.

4to, Was its skin preserved, or the head, or any other bones of the skeleton? Could any part thereof be still found?

Birds, in general, are more prolific, and likewise more ardent in their amours, than quadrupeds. A cock, when excluded from hens, attacks another cock, a capon, a turkey, or a duck. The smaller birds fly to females of a different species when deprived of their own. Commixtures of this latter kind have been repeatedly tried, and the mongrel offspring, instead of being barren, were found to be equally prolific as their parents. The goldfinch and Canary bird, the red-breasted

Answered: Neither the skin, nor any part of the skeleton was preserved, nor can now be had; though the declarant has often regretted the not preserving the foal, as its mother always performed any work that a horse of fifteen pounds value could do.

57th, Is the mother still alive? What is her age?

Answer: The mother died, about eight years ago, of an epidemic cold that was raging among the horses in this country: The mule had little or no milk after foaling, and the foal got some cow's milk: And this is all he remembers of the matter.

DAVID TULLO.

Auchtertyre, 4th February 1780

We James Small tenant in Burnmouth, and Robert Ramsay tenant in Newtyle, hereby certify, That we have often seen the mule above described, and we know that she had a foal, as is narrated by David Tullo.

JAMES SMALL.

ROB. RAMSAY.

Ballantyne-house, 4th February 1780.

The within interrogatories were put to David Tullo, tenant in Auchtertyre, anent the mule he had, and the foal she produced, to which he gave the answers subjoined to each query, and signed them, as did James Small and Robert Ramsay, attesting the truth thereof, in presence of

GEORGE WATSON, J. P.

The original attestation is in my possession; and I lately transmitted notorial or authenticated copies of it to the COUNT DE BUFFON, and to THOMAS PENNANT, Esq; of Downing in Flintshire.

breasted and common linnet, have been subjected to these trials, and the hybrids or mules produced by them uniformly retained their prolific powers*.

I close this section with remarking, that Nature seems to indulge more frolics in the mysteries of Venus than philosophers are apt to imagine; and that some animals whom we are taught to regard as distinct and original species, may only be mules endowed with the faculty of transmission.

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SECT.

* See Buffon des Oiseaux, Tom. I. p. 22. and Tom. IV. Art. du Serin des Canaries.

S E C T. II.

Of a Plan for raising the raw material of Silk in Britain—The texture of Insects is extremely ductile—From many circumstances in their history, it should appear that different kinds intermix, and produce new and fertile species—Upon this view of Nature, a probable plan for producing the raw material of a Silk Manufacture in Britain is submitted to the consideration of the Public—The experiment is easy, attended with no expence, and highly worthy of a trial.

INVENTION is often the offspring of accident : But prejudice, or fixed opinion, is an insurmountable barrier to every invention that depends upon a process of reasoning. A mind, fettered by a strong predilection for particular notions, can never move with freedom, or view objects in different aspects ; and, of course, has not even the chance of stumbling on novelty. Unfortunately for science, this is a very general characteristic of the human species. We are gregarious animals, not in the physical sense alone : With regard to opinion and belief, this herding quality is a more striking feature in the complexion of humanity. Strongly impressed with the force of this truth, some philosophers run into the opposite extreme. Because most men believe without reason, there are others whom no reasoning can convince. Between the two ingenuous minds

minds are confounded, subjects of moment are considered either as inscrutable or as perfectly known, and the spirit of research receives a mortal wound.

To give general currency to a hypothetical notion, requires only the adventitious aid of a few great names. If, upon this slight basis, the fabric rests for a few years, ingenuity, argument, and even experiment, may open their ineffectual batteries. Such is the incorrigible attachment to what men call *authorities*, that nothing but *greater authorities* can eradicate an established prejudice. This temper, which originates from weakness, credulity, and indolence, is perhaps the greatest obstruction that science has to encounter in its progress toward perfection. Hence the man who refutes a received theory does more service to science than its inventor; because he unhackles the mind, and fresh inquiries proceed without embarrassment. New views, for the same reason, which require the illustration of experiment, are of the greatest utility; for, though the notions should turn out to be false, unlooked for truths rise up in the course of the research. Notwithstanding HARVEY's system of *eggs*, LEUWENHOEK's *homunculi*, BUFFON's *living organic particles*, and BONNET's *infinite series of germs*, the theory of generation is still involved in the deepest obscurity; yet the inquiry has enriched anatomy and science with many new and valuable facts.

Because mules from the ass and mare were supposed to be barren, it has been concluded, and even recognized as a law of Nature, that every anomalous production must likewise be denied the faculty of procreating. The wisdom of the Creator has been celebrated in the establishment of this law. It has been regarded as a barrier against the mixture and confusion of species; and the sacredness of the imaginary

ginary institution has almost totally precluded all inquiry into the subject.

The ingenious M. DE BUFFON, however, ventured to investigate the truth. He brought direct evidence, that the common mule, a production from two of the most unprolific quadrupeds, is not deprived of the power of multiplying. Even in our own climate, we had lately an instance of a prolific she-mule*.

By revolving these and similar ideas, I was led to the following views, which, with much deference, I submit to the attention of the public. For the sake of brevity, I shall deliver most of them in the form of queries.

I. As we are ignorant of many circumstances in the œconomy of animals, and, as it is certain, that mongrels from the commixture of different species of small birds have the power of transmitting the kind, may we not conclude, that the supposed law of sterility in mules is at least not so general as we have been taught to believe?

II. As the experiments have hitherto been confined to the most sterile quadrupeds, may we not reasonably expect, that trials made upon the more prolific animals, as the sow, the rabbit, &c. would afford still farther proofs of the fecundity of anomalous beings?

III. Descending lower in the scale of animation, till we come to frogs, lizards, and the reptile race, whose prolific powers are amazing, and in whom Nature assumes a more soft and ductile texture,

may

* See p. 145.

may we not hope to procure multitudes of mules endowed with the faculty of transmissiion ?

IV. Proceeding still lower, till we arrive at the insect tribes, do not similarity of texture, astonishing fertility, the same mode of generating, a great coincidence in the structure of parts, both external and internal, the living on the same or similar nourishment, and many other circumstances, concur in marking them out as the fittest objects for trials of this kind, and from which the greatest success is to be expected ?

The chief obstruction to the execution of trials of this nature arises from the difficulty of alluring different species into mutual and ardent embraces. In one tribe of insects, however, I imagine, that this difficulty will be completely removed. The numerous tribe of butter-flies, after escaping from the chrysalis state, seem to have no other destination but that of propagating and continuing the kind. They no sooner burst through the fetters of the chrysalis, than they roam about in quest of a mate with all the fervours of desire. When they meet their object, they obey with alacrity the commands of Nature. After the operation is finished, the female lays her eggs, and the male acquires a torpid aspect. The intention of Nature being thus completed, both male and female fall victims at the altar of Venus.

As butterflies die very soon after procreating, and, as they have few other desires while in that state, is it not probable, that, when excluded from their particular kinds, males and females of different species will spontaneously unite ? From this union, is it not likewise probable, that the eggs of the females will be impregnated ?

From

From the accurate dissections of the celebrated REAUMUR it appears, that the parts of generation in the various kinds of butterflies are extremely similar. From the several metamorphoses to which they are subjected, the ductility of their texture is also apparent. When, to these facts, we add their great prolific powers, is it not reasonable to suppose, that anomalous productions from different species will continue to be fertile?

This reasoning may easily be subjected to the test of experiment. Let any person feed a variety of caterpillars in separate boxes. When transformed into moths or butterflies, let the males and females of different species be admitted to each other. The effects of these trials time alone can determine. If it happens, as there is great reason to expect, that these insects freely unite; that the eggs of the females are impregnated by this union; and that the spurious offspring are endowed with prolific powers, and perpetuate the kind, then will philosophers have the satisfaction of seeing an universal prejudice, concerning the oeconomy of animals, completely removed.

The mere gratification of curiosity would justify a set of experiments that require so little time, trouble, or expence*. But the idea of utility gives alacrity to investigation. Considering whether some use might not be derived from these projected trials upon butterflies, the following notion, which, perhaps, may be regarded as fanciful, occurred.

The silk worm is a native of warm climates. Its constitution is

VOL. II.

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too

* About fourteen years ago, I attempted to make these experiments. But, from my situation in a large city, and the want of proper food, I found that my silk worms died before they arrived at maturity.

too delicate to bear the cold and the vicissitudes of our weather. Neither is the mulberry, the proper food of the animal, raised here in sufficient quantities. These are the chief obstructions to the culture of silk in this country. But large sums of money are annually sent out of Britain for purchasing raw silk. Hence any rational scheme for preventing this expenditure merits the attention both of philosophers and of the public. I despair not of seeing this desirable end accomplished. I even look forward with joy to a period, which I hope is not distant, when the production of good silk will be as common in Scotland as in any other nation in Europe, or Asia.

The mode I propose is simple; and therefore its success is the more probable. In this country, we have many caterpillars which spin pods of no inconsiderable size and goodness. A caterpillar that feeds upon the pear-tree, and is produced from the fly called *Phalæna pavonia*, or *peacock-moth*, spins a large pod, the silk of which is coarser and stronger than common silk. Another species, called by the French *la livrée*, feeds on the leaves of most fruit trees, and spins a pod extremely similar to that of the silk worm. Other caterpillars, possessing the same qualities, live upon the oak, the elm, the plane, &c. But it is needless to give a more enlarged enumeration. Now, commixtures with the butterflies of these caterpillars and the silk fly will, I imagine, produce worms attempered in constitution to the climate of Britain, capable of being nourished by some of our indigenous plants, endowed, at the same time, with the faculty of perpetuating the kind, and of spinning a silk equal, if not superior, to that imported from warmer regions.

To this scheme it may be objected, that, on the supposition of its practicability, the species of butterflies should be perpetually augmenting,

menting, and that to their variety there should be no end. I answer, that this objection strengthens the probability of the plan: For the varieties of the butterfly and moth, already known and described, amount nearly to 1000. Many of these, I doubt not, have been produced by accidental commixtures. Two causes concur in preventing such a frequency of commixtures of this kind as might be imagined. Many species of caterpillars associate, and fix their chrysales upon particular plants or places, and, immediately after their metamorphosis, the males attach themselves to the females. Other species not only associate, but escape from the chrysalis in particular months of the year, as if Nature meant to prevent their uniting. Some kinds come out only in April, others in May, June, July, August, and September. These and other circumstances render the accidental concurrence of males and females of different species much less frequent than if all the kinds lived at the same time, and fed upon the same plants.

It may likewise be objected, that, as different species are transformed in different months, and as the flies die soon after their change, it will be impossible to try these projected experiments with kinds which come out of the chrysalis state at the distance of one or two months from each other. This objection is removed by two singular facts. It is true, that coition debilitates and quickly kills butterflies. But, when confined, and prevented from mutual embraces, they preserve both their existence and vigour for five or six months*. Besides, from the accurate experiments of REAUMUR, we learn, that the duration of the chrysalis state may be prolonged

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or

* Wahlbom in Amoen. Acad. Vol. I. p. 105.

or shortened at pleasure, by the application of different degrees of heat and cold *.

Upon the whole, I most seriously recommend this idea to the attention of men who have leisure, and who are properly situated, to give the project a fair trial. If my ideas be right, the person who realises them will not only make a fortune, but immortalise his name.

CHAP.

* Reaumur, Tom. III. 12mo. edit. p. 11.

CHAPTER IV.

Of the Varieties of Man which have hitherto been discovered in every region of the Globe—Varieties in Colour—in Stature—in Figure and Features—in Manners and Customs—in Religion, and Religious Opinions and Ceremonies—Of Cannibals both ancient and modern—Of Human Sacrifices in the Old and New Worlds—Of War and Warlike Instruments—Of Agriculture, and the Spontaneous Productions of the Earth—Of Marriages, Burials, Civil Government, Arts and Manufactures, &c. &c.

WITH regard to colour, in the human species, from black it runs through almost every possible shade till it arrives at what we denominate *white*. Many circumstances give rise to differences in the colour of the skin. Even in the same climate, in the same town or village, marked shades of colour are to be observed not only in individuals, but in whole families, and these shades are generally transmitted to posterity, except when the breed happens to be crossed by races of individuals of a different complexion, which produces an intermediate shade. In a large city, independent of foreign commixtures, what a variety of colours are to be perceived ?

Notwithstanding these local, and often hereditary shades, which take place in the same climate, and even in a small district of the
same

same country, Nature, from particular situations as to heat and cold, produces distinctions of the most marked kinds.

In the Old Continent, however, the deepest shade of black is to be found in the Torrid Zone. From this region of the earth, as we approach either to the south or north, the colour of the human kind gradually becomes more and more white, till we arrive at the temperate climates, where the complexion, to our eyes, at least, is most beautiful. But our ideas of beauty are entirely relative. To a negro, the deepest black is the most admired colour in a female; and the same sentiment is and must be entertained by people of all intermediate colours.

In proportion as we recede from the equator, either to the south or the north, the shades of colour become always whiter and whiter. But here Nature, correspondent to her uniform procedure, reverses, or rather confirms, her original plan. From the negroes under or near the line, to the termination of the temperate zone, the gradations of colour are to be ascertained. But, what is singular and curious, after passing north of the temperate zone, the colour of the natives is not only more swarthy, but again approaches to blackness. From this fact, which is perfectly known, it should seem, that extreme heat and extreme cold produce nearly the same appearances on the human skin.

The inhabitants of Lapland and of Nova Zembla, the Borandians, the Samoiedes, the northern Tartars, the Ostiacks, the Greenlanders, and the savages to the north of the Esquimaux Indians, seem to be the same race of people. All of them have broad large faces, and
flat

flat noses *. Their eyes are of a yellowish brown colour, inclining to black †. Their eye-lids extend towards the temples ; their cheek-bones are remarkably prominent ; their mouths are large, and their lips thick and reflected ; their voice is squeaking ; their head is large ; their hair black and smooth ; and their skin is of a tawny or swarthy hue. Their size is diminutive, most of them not exceeding four feet high ; and their tallest men are not above four feet and a half. This numerous race of people differ so much from all others, that they appear to constitute a distinct species. The Borandians are still smaller than the Laplanders. The iris of their eyes is of the same colour ; but the white is of a reddish yellow. Their skin is more tawny ; and their legs are very thick and ill-shaped.

The Samoiedes are more squat than the Laplanders ; their heads are larger, their noses broader, their complexion darker, their legs shorter, and their beards more scanty of hair. The skin of the Greenlander is more tawny than that of the other nations, being of a deep olive colour. It is even said, that some of them are as black as the African negroes. The women, among all these nations, are as ugly as the men, and resemble them so much, that the distinction is not easily to be perceived. In Greenland, the women are very short ; but their bodies are well proportioned. Their hair is blacker, and their skin softer than those of the Samoiedes. Their breasts are so long and flexible, that they can suckle their children over their shoulders. Their nipples are as black as jet, and their skin is of a deep olive colour. Their visage is large, their eyes small, but black and vivacious, and their feet and hands are short. In all other respects,

* Le Voyage de Regnard, tom. I. p. 169. et Les Voyages du Nord faits par les Hollandois.

† Linnæi Fauna Suecica, 1746, p. 1.

respects, they resemble the Samoiède females. The savages north of the Esquimaux, and even in the northern parts of Newfoundland, have a great resemblance to the Greenlanders. Like them also, their stature is small, their faces broad, and their noses flat. Their eyes, however, are larger than those of the Laplanders.

All those races resemble each other not only in deformity, in lowness of stature, and in the colour of their hair and eyes, but likewise in their dispositions and manners. All of them are equally gross, stupid, and superstitious. The Danish Laplanders keep large black cats, to whom they communicate their secrets, and consult in all their important affairs. In every family, among the Swedish Laplanders, a drum is kept for the purpose of consulting the devil; and, though they are robust and nimble, such is their pusillanimity, that they never could be persuaded to face a field of battle. Gustavus Adolphus attempted to embody a regiment of Laplanders; but he was obliged to relinquish the project. They cannot, it would appear, exist any where but in their own country, and in their own manner. They travel on the snow with skates made of wood, about two yards long, and half a foot in breadth. With these they run on the snow so rapidly, that they overtake easily the swiftest animals. They use a long pole, pointed with iron at one end, and rounded at the other. By means of this pole, they push themselves forward, direct their course, prevent their falling, stop their impetuosity, and kill the animals they pursue *. The skates employed by the Samoièdes are shorter, seldom exceeding two feet in length. They likewise use the bow and the cross-bow; and the Muscovite Laplanders are said to dart a javelin with such force and dexterity, that,

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* A specimen of these skates may be seen in the Museum of the Antiquaries of Scotland.

at the distance of thirty paces, they often hit a mark not larger than a crown piece. They hunt the lynx, the fox, the martin, and the ermine, and barter their skins for brandy and tobacco. Their principal food is dried fish, and the flesh of the bear and rein-deer. Their bread consists of the pounded bones of fishes, mixed with the tender bark of the birch or the pine tree. Their common drink is whale-oil, or water in which the berries of the juniper have been infused. They are, in general, idolaters and extremely superstitious. More gross than savages, they have neither courage nor a sense of shame. They bathe promiscuously naked, boys and girls, mothers and sons, brothers and sisters, without feeling the smallest sense of impropriety. They offer their wives and daughters to strangers, and think it the highest affront if the offer be rejected. This custom is universal among the Samoiedes, the Borandians, the Laplanders, and the inhabitants of Greenland. The Laplanders, in winter, clothe themselves with the skin of the rein-deer, and, in summer, with the skins of birds.

In Nova Zembla, the women pierce their noses and ears, and ornament them with pendants of blue stones; and, to augment their charms, they draw blue lines across their forehead and chin. In Greenland, the women clothe themselves with the skin of the dog-fish. They likewise paint their faces blue and yellow, and wear pendants in their ears. All of them live under ground, or in huts sunk almost below the surface, which they cover with the bark of trees, or with the bones of fishes. During winter, it is a common practice with them to make subterraneous communications from one habitation to another, by which they are enabled to visit their neighbours without going abroad. Darkness, continued for several months, obliges them to illuminate their dreary abodes with lamps,

in which they burn the same whale-oil that they use for their common drink. In summer, they seem to have as little enjoyment as in winter ; for they are obliged to live perpetually in a thick smoke. They have no other contrivance to guard themselves against the bite of the gnats, and various other flies, which are extremely numerous, because their summer is so short, that flies of every species appear nearly at the same time, and crowd the air. Notwithstanding this melancholy and hard mode of living, these people are seldom sick, and almost all of them arrive at extreme old age. The men, even when old, are so vigorous, that they are not easily to be distinguished from the young. Blindness, a natural consequence of their situation, is very frequent among them, and is the chief malady to which they are subjected. Their eyes being perpetually dazzled with the reflection from the snow in winter, autumn, and spring, and at all seasons involved in smoke, few of them retain their sight after an advanced period of life.

From these and similar facts, it appears, that the Samoiedes, the Zemblians, the Borandians, the Laplanders, the Greenlanders, and the savages to the north of the Esquimaux, belong to the same race of men ; because they resemble each other in figure, in stature, in colour, in manners, and in customs. That very strange custom of offering their wives and daughters to strangers, and of being vain when the offer is accepted, proceeds, probably, from a sense of deformity both in themselves and in their females. In the neighbouring nations, on the contrary, as those of China and Persia, where the women are most beautiful, the jealousy of the men is remarkable. Upon surveying the different nations adjacent to that vast tract of country occupied by the Laplanders, there seems to be no relation between them and the race last mentioned. The Ostiacks and the
Tongusians,

Tongusians, who are adjacent to the Samoiedes on the south and south-east, are the only people who have any marked resemblance to them. The Samoiedes and Borandians have no similarity to the Russians. The Laplanders resemble not, in any degree, the Fins, the Goths, the Danes, or the Norwegians. The Greenlanders differ totally from the savages of Canada, who are large and well made. The Ostiacks, however, seem to be a less ugly, and a taller branch of the Samoiedes *. The Ostiacks feed upon raw flesh or fish. They eat every kind of animal without distinction; and for drink they prefer blood to water. They are, in general, idolaters; and they appear to form the line which separates the Lapponian and Tartarian races. The Tongusians seem to be less degenerated than the Ostiacks; for, though ugly, they are taller and better proportioned. The Samoiedes and Laplanders lie under the 68th or 69th degree, but the Ostiacks under the 60th. The Tartars, who are situated along the Wolga, in the latitude of 55, are a gross, stupid, and brutal people. Like the Tongusians, they have no ideas of religion; and they will not marry young women till they have had intercourse with other men.

In Asia, the Tartars occupy vast regions. They spread over that great tract of country which extends from Russia to Kamschatka. The Tartars border with China, the kingdoms of Bouton, and of Alva, and the Mogul and Persian empires, as far as the Caspian sea, on the north and west. They extend along the Wolga and the west coast of the Caspian, as far as Daghestan. They have penetrated to the north coast of the black sea, and have establishments in the Crimea, in Little Tartary, and in the Ukraine. These people, even

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* Le Voyage de Evertshbrand, p. 212. les nouveaux Mem. sur l'état de la Russie, Tom. I. p. 270.

when young, have large wrinkled foreheads ; their noses are broad and short, and their eyes small and sunk *. Their cheek bones are high, and the lower part of their face is very narrow. Their chin is long and prominent, and the upper jaw falls in. The teeth are long and distinct from each other. The eye-brows are so thick, that they cover the eyes ; the face is flat, the skin tawny, and the hair black. Their bodies are of a middle size, but strong and robust. Their beards are scanty, and the hairs are disposed in tufts, like those of the Chinese. There is something frightful in the countenances of the Calmuck Tartars. All of them are wandering vagabonds, and live in tents made of cloth, or of skins. They eat the flesh of horses, either raw, or a little softened by putrifying under their saddles. They likewise eat fishes dried in the sun. Mares milk, fermented with the flour of millet, is their usual drink. They all shave the head, except a small tuft, which is allowed to grow, in order to form two tresses, one of them to hang on each side of the face. The women, who are as ugly as the men, wear their hair, in which they fix small pieces of copper, and similar ornaments.

No marks of religion, or of decency in their manners, are to be found among most of these tribes. They are all robbers ; and the Tartars of Daghestan, who border on civilized nations, have a great trade in slaves, whom they carry off by force, and sell to the Persians and Turks. Their chief wealth consists of horses, which seem to be more numerous in Tartary than in any other country. The Tartars live perpetually with their horses, and are continually occupied in training, dressing, and exercising them. They manage their horses with such skill and address, that a stranger would be apt to imagine that both creatures were animated by the same mind.

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* Vid. les Voyages de Rubrusquis, de Marc Paule, de Jean Struys, du Pere Avril, &c.

To know the particular distinctions which subsist among the race of Tartars, we must attend to the descriptions of their different tribes communicated to us by travellers. TAVERNIER informs us, that the Calmucks, who live in the vicinity of the Caspian Sea, between Muscovy and Great Tartary, are a robust people, but, perhaps, the most ugly and deformed beings exhibited upon this earth. Their faces are so broad and so flat, that their eyes, which are small, are situated five or six inches asunder. Their noses are so depressed, that, instead of regular nostrils, two holes are only to be seen. Their thighs bend outward, and their legs inward.

After the Calmucks, the Tartars of Daghestan may be considered as holding the next rank in deformity. The Little Tartars, or those of Nogai, who live in the neighbourhood of the Black Sea, though they have flat faces, small eyes, and, in their general figure, resemble the Calmucks, are by no means so ugly. This race of Tartars have probably lost a part of their original deformity by their intercourse with the Circassians, the Moldavians, and other adjacent nations. Like the Calmucks, the Siberian Tartars have broad faces, short flat noses, and small eyes; and, though their languages greatly differ, their general similarity is so striking, that they ought to be regarded as the same race of people. PERE AVRIL considers the Tartars of Bratski as of the same race with that of the Calmucks; and, as we advance eastward, and approach Independent Tartary, the features of the Tartars gradually soften and become more agreeable; but their essential characteristics are never obliterated. The Mongou Tartars, who conquered China, are the most polished race of these people. Still, however, like all the other tribes, their eyes are small, their faces broad and flat; and they have thin black or red beards*,

short

* Palafox, p. 44 †.

short sunk noses, and a tawny complexion. The inhabitants of Thibet, and the other southern provinces of Tartary, are likewise less deformed.

Mr SANCHEZ, first physician to the Russian army, a man of learning and ability, communicated to the COUNT DE BUFFON some remarks made by him, in travelling through Tartary, of which the following is the substance.

Mr SANCHEZ, in the years 1735, 1736, and 1737, visited the Ukraine, the banks of the Don as far as the sea of Zabach, and the confines of Cuban, till he arrived at Asoph. He travelled over the deserts which lie between the country of the Crims and Backmut. He journeyed among the wandering Calmucks from the kingdom of Casan to the banks of the Don, among the Tartars of Crimea and Nogai, and likewise among the Tartars of Kergissi and Tcheremissi; who are situated to the north of Astracan, from the 50th to the 60th degree of latitude. He informs us, that the Tartars of Crimea and of Cuban were of a middle stature; and that they had broad shoulders, narrow flanks, strong nervous limbs, black eyes, and a tawny complexion. The Tartars of Kergissi and Tcheremissi are smaller and more squat; they are grosser and less agile; their eyes are black; their complexion tawny, and their faces are still broader than those of the former. Among these Tartars, he observed several men and women who had no resemblance to the natives, some of whom were as white as the inhabitants of Poland. As these nations abound with both male and female slaves, who are carried off from Russia and Poland; as a plurality of wives and concubines is permitted by their laws; and, as their Murzas, or nobles, bring their wives from Georgia and Circassia, the children produced by these all are whiter,

and less deformed than those of the unmixed natives. Among the Tartars, there is even a whole nation, that of the Kabardinski, the inhabitants of which are remarkably beautiful. M. SANCHEZ saw no less than three hundred of these men in the Russian service; and he assures us that they made a very handsome appearance. Their countenances were as white and fresh as any in Europe: They had large black eyes; and they were tall and well proportioned. He adds, that the Lieutenant-General of Serapikin, who had lived long in Kabarda, informed him, that the women were equally beautiful. This nation, however, M. SANCHEZ tells us, are said to have come originally from the Ukraine, and had been transported into Kabarda about an hundred and fifty years ago.

On one side, the blood of the Tartars is mixed with that of the Chinese, and, on the other, with that of the oriental Russians. But this mixture never obliterates entirely the characteristic features of the race; for, among the Muscovites, the Tartarian aspect is not unfrequent; and, though the former have originated from the common European race, many individuals with squat bodies, thick thighs, and short legs, like those of the Tartars, are still to be found. But the resemblance of the Chinese to the Tartars is so great, that it is uncertain whether they belong not to the same race. The most striking difference between those people arises from a total disparity in their dispositions, manners, and customs. The Tartars are warlike, fierce, and fond of hunting. They love exercise and independence; and they are hardy and brutally gross. The manners of the Chinese are totally opposite; for they are effeminate, peaceable, indolent, submissive, superstitious, ceremonious, and parasitical. In their form and features, however, they greatly resemble the Tartars.

It is remarked by HUGON, that the Chinese men are large and fat, with well-proportioned limbs, round broadish faces, small eyes, large eye-brows, high eye-lids, and small sunk noses. They have seven or eight tufts of hair only on each lip, and very little on the chin. Those who inhabit the southern provinces are more brown and tawny than those in the northern parts; and, in colour, they resemble the people of Mauritania, or the most swarthy of the Spaniards. In the middle provinces, however, they are as white as the Germans. DAMPIER informs us, that in the island of St John, on the coast of China, the natives are tall, erect, and not incumbered with fat; that they have long visages and high foreheads; that their eyes are small, their nose pretty large and elevated, their mouth of a moderate size, their lips thin, their complexion ash-coloured, and their hair black; that their beard is naturally scanty; and that they pull out all the hairs, except a few on the upper lip and chin. GENTIL tells us, that the Chinese, especially in the northern provinces, have nothing disagreeable in their aspect. Those, indeed, in the southern provinces, whom necessity exposes much to the sun, are tawny. They have, in general, small oval eyes, short noses, and thick bodies of a middle stature. The women, he assures us, employ every art in order to diminish their eyes. For this purpose, the young girls, instructed by their mothers, extend their eye lids continually, with the view of making their eyes oblong and small. These properties, in the estimation of the Chinese, when joined to a flat nose, and large, open, pendulous ears, constitute the perfection of beauty. He adds, that their complexions are fine, their lips of a beautiful red colour, their mouths well-shaped, and their hair exceedingly black; but that their teeth are blackened by chewing betle; and their constant practice of painting injures their skin to such

such a degree, that they have the appearance of old age before they reach their thirtieth year.

PALAFIX affures us, that the Chinese exceed the oriental Tartars in whiteness; that they have also smaller beards; but that, in every other respect, there is little difference in the countenances of these two nations. INNIGO BIERVILLAS tells us, that the Chinese women are formed with more symmetry than the men. The faces of the latter, he remarks, are large, and their complexions of a yellowish hue; their noses are broad and flattened; and their bodies are thick and coarse. On the contrary, the women are exceedingly handsome; their complexion and their skin are very fine; and their eyes are beautiful. He adds, that few of them have good noses, because, from some prejudice, they are artificially compressed during infancy. Almost all the voyagers agree, that, in general, the Chinese have broad faces, small eyes, and hardly any beard; that the natives of Canton, and along the southern coast, are as tawny as the inhabitants of Fez in Africa; but that those of the interior provinces are commonly white. From these and similar facts, it is apparent that there are great similarities between the Tartars and Chinese. To confirm this idea, we shall subjoin the following passage from Charadin: ‘The size of the Little Tartars,’ he remarks, ‘is about four inches smaller than that of the Europeans; and, in the same proportion, they are thicker. Their complexion is copper-coloured; their faces are broad, flat, and square; their eyes are small, and their noses compressed. Now, these are the exact features of the Chinese; for, after the most minute investigation, during my travels, I found that all the people to the east and north of the Caspian Sea, and to the east of the peninsula of Malacca, have the same configuration of face, and nearly the same stature. From

‘ this circumstance I was induced to think that all these people, notwithstanding the varieties in their manners and complexion, sprung from the same source ; for differences in colour proceed entirely from climate and the manner of living ; and varieties in manners originate from the soil, and from the degrees of opulence enjoyed by different nations *.’

We are informed by Father PARENNIN, who resided long in China, and diligently observed the manners of that people, that the neighbouring nations on the west, from Thibet to Chamo, differed from the Chinese in language, features, external conformation, and manners ; that they are rude, ignorant, and slothful, faults by no means common among the inhabitants of China ; that, when any of these Tartars come to Peking, and are asked by the Chinese the reason of these differences, they answer, that these are occasioned by the soil and the water. PARENNIN adds, that this remark seems to be more verified in China than in any other country he ever visited ; and that, when following the Emperor in an excursion to Tartary, as far as the 48th degree of north latitude, he discovered Chinese families, who had migrated from Nankin, and settled in that country. The children of these people had become perfect Mongous, with their heads sunk between their shoulders, crooked limbs, and a gross and disgusting aspect †. The Japanese are so similar to the Chinese, that they may be considered as the same race of men. Their colour is indeed darker, because they inhabit a more southern climate. They are haughty, warlike, full of vigour, civil, and obliging ; but they are a vain and inconstant people. With incredible patience they sustain hunger, thirst, cold, heat, and every other hardship incident

* Chardin, tom. 3. p. 86.

† L^{ettres} Edifiantes, Recueil 24.

cident to human nature. Like the Chinese, they eat their victuals with small sticks; and they use, during their meals, a multitude of strange grimaces and ceremonies. They are laborious and skilful artificers; and, in fine, their manners, customs, and dispositions, are nearly allied to those of the Chinese.

The ridiculous custom of rendering the feet of their females so small that they can with difficulty support their bodies, is common to both nations. Early compression and confinement are said to be the means by which this end is accomplished. But it is universally allowed, that every woman of fashion, and every woman who wishes to be reckoned handsome, must have her feet so small that they could easily enter the shoe of a child of six years of age. It may, therefore, upon the whole, be concluded, that the Japanese and Chinese are the same race of men; that the commencement of their civilization must have been at a very early period; and that they differ more from the Tartars in their manners than in their figure.

The country of Jesso, which lies to the north of Japan, is situated under a climate which ought to be temperate. It is, however, cold, barren, and mountainous. Its inhabitants are also totally different from those of China and Japan. They are a gross and a brutal race, possessing neither arts nor manners. Their bodies are thick and short; their hair is long and bristly; their eyes are black; their forehead is flat; and their colour yellowish. Their whole bodies, as well as their faces, are very much covered with hair. They live like savages; and their food consists of the blubber and oil of whales, and of other fishes. They are exceedingly indolent and slovenly. They allow their children to go almost naked; and the women employ no other ornament but that of painting their lips and eye-brows

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blue. Hunting bears and rein-deer, and fishing whales, constitute the chief pleasure and occupation of the men. Though they have some Japanese customs, yet, in general, they have a greater resemblance to the Samoides, or to the northern Tartars, than to the natives of Japan.

In viewing the people on the south and west of China, we find, that the Cochin-Chinese, who inhabit a mountainous region which lies south of China, are more ugly and more tawny than the Chinese.

The Monarch of Cochin-China is absolute master of that extensive kingdom, which he governs by the assistance of four principal ministers, who possess the power of disposing of all employments, whether civil or military. The household of the Monarch is composed of the strongest and most handsome men who can be found in the kingdom. He is very rich; and his wealth proceeds from a tax paid by all his subjects, from the age of nineteen to that of sixty. The Cochin-Chinese, when compared with the other Indians, are a brave, active, and industrious people. Though they are poor and ignorant, they are lovers of truth. They are, however, extremely polite to strangers, as well as to each other. The Cochin-Chinese are fond of women; and a man, by their law, may have as many wives as he can maintain. Women, convicted of infidelity, are exposed to the fury of irritated elephants. The women have not our ideas of modesty; for they go quite naked to the middle, and bathe promiscuously, and without any ceremony, in the view of the public. The Cochin-Chinese, in their persons, have a great resemblance to the Chinese, and their women are fair and beautiful.

In this country, the religion is the same with that of China. The
people

people do homage to Pagodas; and their learned mandarines attend the temple of Confucius, in the same manner as those of China. The chief learning of the Cochin-Chinese is their capacity of reading Chinese books, and acquiring a knowledge of the principles of morality which they contain. The whole country of Cochin-China consists of chains of mountains; and the intervening valleys are well cultivated. The high mountains are covered with wood, and are the habitation of elephants, tygers, and many other ferocious animals. From these mountains, however, they procure honey, wax, ratans, gamboge, and even gold. Mines of this precious metal are very frequent; but, though these mines might be very productive, if the natives were industrious, and acquainted with the art of mining, they are much neglected. They never dig deeper than the height of a man. ‘In the place where I saw them at work,’ says the Abbé ROCHON, ‘masses of pure gold, perfectly free from
 ‘the mixture of extraneous bodies, and weighing two ounces, are
 ‘sometimes found. This gold, collected in dust or small fragments,
 ‘is afterwards formed into cakes, and carried to market, where it is
 ‘fold like other merchandise *.’

The Tonquinese, who live under a colder climate, and whose country is richer, are more beautiful and handsome. We are informed by DAMPIER, that the Tonquinese are of a middle stature; and that, though tawny, their skin is so fine and delicate, that the small changes in their complexion from redness to paleness are easily perceptible, a circumstance which distinguishes them from all the other Indians. The visage of the Tonquinese is flat and oval; their
 nose

* Voyage to Madagascar, and the East Indies, by the Abbé Rochon, p. 393. Translat.

nose and lips well proportioned; their hair long, black, and very thick; and they employ every art to render their teeth black. In the relations subjoined to TAVERNIER's voyages, we are told that the Tonquinese are of a goodly stature, and of an olive colour; that they have not the flat faces and noses of the Chinese; and that they are, in general, much more handsome.

From the facts above related, it is obvious that these nations differ but little from the Chinese. They resemble, in colour, the inhabitants of the southern provinces of China. Their being more tawny is owing to the superior heat of their climate; and, though their faces and noses be more prominent, they may still be considered as people who have sprung from the same stock. The same observation is applicable to the natives of Siam, Pegu, Aracan, Laos, &c.; for, though they differ from the Chinese in colour, yet they differ in a more remarkable manner from the other Indians. According to LOUBERE, the stature of the Siamese is rather small; their bodies are well made; their faces are large, and their cheek-bones prominent; their fore-head contracts suddenly, and, like the chin, terminates in a point; their eyes are oblique and small; the white of the eye is yellowish; the cheeks are hollow, owing to the great elevation of the upper part of the cheek-bones; the mouth is large, the lips thick, and the teeth black; their complexion is coarse, being a mixture of brown and red; their nose is short, and rounded at the point; their ears are naturally large, and are much esteemed when they are of a remarkable magnitude. All the eastern nations discover this taste for long ears. Some draw the lobe of the ear, in order to stretch it to a greater length, and pierce it so as to allow the admission of an ordinary pendant. Others, as the natives of Laos, so prodigiously widen the holes in their ears, that a man's hand may

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be thrust through them : Hence the ears of these people often descend to the tops of their shoulders.

The ears of the Siamese are naturally larger than ours. They have coarse, black, straight hair, which both men and women wear so short, that, all round the head, it reaches no lower than their ears. They cover their lips with a perfumed species of pomatum, which gives them an unnaturally pale appearance. Their beards are small, because they constantly pull out the hairs. We are informed by STRUYS, that the women of Siam wear such large and heavy pendants in their ears, that the holes gradually become wide enough to admit a man's thumb. He adds, that the colour of both women and men is tawny ; that they are not tall, but handsome ; and that, in general, they are a mild and polished people. It is remarked by Father TACHARD, that the Siamese are very agile, and that their country produces dancers and tumblers equally dexterous as any of those in Europe. He farther tells us, that the custom of blackening their teeth originates from the notion of its being unbecomly for men, like the brutes, to have white teeth.

In the kingdoms of Pegu and Aracan, the inhabitants differ not from those of China and Siam, except in their colour, which is somewhat blacker *. Large flat foreheads are admired by the natives of Aracan. To procure this species of beauty, immediately after birth, they apply a plate of lead to the foreheads of their children. Their nostrils are large and open ; they have sparkling eyes ; and their ears are so long, that they rest upon their shoulders. Without reluctance, they eat putrified fishes, mice, rats, and serpents †. The
women

* Pigafetta, p. 46.

† Voyages de Ovington, tom. 2. 274.

women are pretty fair, and their ears are as long as those of the men *. The natives of Achen, who lie still farther north than those of Aracan, have likewise flat faces and olive complexions: Their manners are gross: Their boys are allowed to go quite naked; and the girls have only a thin plate of silver to prevent their blushes †. It is obvious, that all these nations differ not much from the Chinese; and that they resemble the Tartars in the smallness of their eyes, their flat visages, and their olive colour.

In proceeding southward, however, they begin to be much more sensibly diversified. The natives of Malacca, and of the island of Sumatra, are small, black, active, and well-proportioned. They go naked from the middle upwards, except a small scarf, which they carry sometimes on one shoulder, and sometimes on the other ‡. Nature has made them brave; and they become very formidable after taking their opium, which produces in them a kind of ferocious intoxication ||. According to DAMPIER, the inhabitants of Malacca and Sumatra belong to the same race: They speak nearly the same language; their tempers are fierce and haughty; their stature is of a middle size; they have long visages, black eyes, noses of a moderate bulk, and thin lips. By the frequent chewing of betle, their teeth are dyed black §. In the island of Pissagan, which lies about sixteen leagues west of Sumatra, the inhabitants are tall, and, like the Brasilians, of a yellow colour. They have long smooth hair, and go absolutely naked **. Those of the islands of Nicobar, which lie north

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* Recueil des Voyages de la Compagnie Hollandoise, tom. 6. p. 251.

† Ibid. tom. 4. p. 63. and le Voyage de Mandelslo, tom. 2. p. 328.

‡ Les Voyages de Gherardini, p. 46.

§ Lettres Edifiantes, Recueil, 2. p. 60.

§ Dampier, tom. 3. p. 156.

** Recueil de la Comp. de Holl. tom. 1. p. 281.

of Sumatra, are of a tawny yellowish complexion, and go likewise perfectly naked *. We are told by DAMPIER, that the natives of the Nicobar islands are tall and handsome; that their visage is long, their hair smooth and black, and their noses of a moderate size; that the women pull the hairs from their eye-brows, &c. In the island of Somboro, to the north of Nicobar, the natives are very black, and paint their faces with various colours †. In Malacca, in Sumatra, and the small adjacent islands, though the natives differ between themselves, they differ still more from the Chinese, Tartars, &c. and seem to have sprung from a different race; yet the natives of Java, who border upon those of Malacca and Sumatra, have no resemblance to them; but they resemble the Chinese, except in colour, which, like that of the Malays, is red mingled with black. PIGAFETTA remarks ‡, that these people likewise resemble the natives of Brazil; that their complexion is coarse; that, though neither of a remarkably large nor small stature, they are very muscular and squat; that their faces are flat, and their cheeks flabby and pendulous; that their eye-brows are large, and inclined toward the temples; that their eyes are small, and their beards thin, and very black. We are informed by Father TACHARD, that the people of Java are strong and handsome; that they are active and brave; and that the great heat of the climate obliges them to go naked. It appears, from the *Lettres Edifiantes*, that the inhabitants of Java are of a purplish red colour; and that they are mild, courteous, and familiar.

It is related by FRANCIS LEGAT, that, in Java, the women, who are not so much exposed to the heat of the sun, are less tawny

VOL. II. Z than

* *Lettres Edifiantes*, Recueil, 2. p. 172.

† *L'Hist. gen. des Voyag.* tom. 1. p. 387

‡ *Ind. Orient.* part 1. p. 51.

than the men ; that their countenances are comely, their breasts prominent and handsome ; that their complexion, though dusky, is uniform and beautiful ; that they have a delicate hand, a soft air, sparkling eyes, and an agreeable smile ; and that many of them dance with great spirit and elegance *. The Dutch voyagers, in general, agree, that the natives of Java are handsome, nervous, and robust ; that their visages are flat, their cheeks prominent and broad, their eyes small, and their eye-lids large, their hair long, and their colour tawny ; that their beards are scanty ; that they wear their nails and hair very long ; and that they polish their teeth with files †.

From these and similar facts, it may be concluded, that the natives of Java have a great resemblance to the Chinese and Tartars ; and that those of Malacca, Sumatra, and the small islands adjacent, differ from them both in form and features. Neither is this phenomenon surprising ; for it is obvious, that the peninsula of Malacca, the islands of Sumatra and Java, as well as the other islands in the Indian Archipelago, must have received their people originally from the neighbouring nations on the continent. This circumstance must necessarily have given rise to a great variety among the inhabitants, both in colour and features, and in the form of their bodies. For example, in the island of Java, there are a people denominated *Chacrelas*, who differ totally from the natives of this island, as well as from all the other Indians. They are white and fair, and their eyes are so weak, that they cannot bear the rays of the sun. In the day, they go about with their eyes half shut, and directed to the surface of the ground ; and they see best during the night ‡.

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* Les Voyag. de Franc. Legat. tom. 2. p. 130.

† Recueil des Voyag. de la Comp. Holl. tom. 1. p. 392. Mandelstø, tom. 2. p. 344.

‡ Les Voyag. de Legat. tom. 2. p. 137.

The inhabitants of the Molucca islands, PYRARD remarks, have a great resemblance to those of Sumatra and Java in language, manners, customs, arms, colour, &c. *. We are informed by MANDELSLO, that the men are rather black than tawny, and that the women are fairer; that their eyes, eye-brows, and eye-lids, are large; that their bodies are strong and robust; that they are agile and dexterous; and that they live long. We are likewise told by this traveller that each island has a language † peculiar to itself; and that, therefore, they have probably been peopled by different nations. He adds, that the inhabitants of Bali and of Borneo, are rather black than tawny ‡; but, according to other travellers, they are only brown, like the other Indians ||. It is related by the Dutch travellers, that the natives of the island of Banda are remarkable for longevity; that they had seen a man aged 130, and many others who approached to that extraordinary period of life; that these islanders, in general, are very indolent; that the men do nothing but saunter about; and that all the laborious offices are performed by the women §.

The inhabitants of Manilla, and of the other Philippine islands, by their intercourse with the Spaniards, the Indians, the Chinese, the Malabars, the Negroes, &c. are more diversified, perhaps, than those of any other part of the world. The Negroes, who live in the woods and rocks of Manilla, differ entirely from the other inhabitants. Like the Negroes of Angola, some of them have crisped hair,

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and,

* Les Voyag. de Pyrard, tom. 2. p. 178.

† Les Voyages de Mandelslo, tom. 2. p. 378.

‡ Voyag. de Mandelslo, tom. 2. p. 363.

|| Recueil des Voyag. de la Comp. de Holl. tom. 2. p. 120.

§ Ibid. tom. 1. p. 566.

and, in others, it is long, and their colour consists of various shades of black. Among these people, like the islanders mentioned by PRO-LOMY, some have been seen, it is said, who had *tails* four or five inches in length. For this supposed fact, the ingenious COUNT DE BUFFON quotes the authority of GEMELLI CARRERI *. BUFFON, it would appear, had been unacquainted with the history of GEMELLI CARRERI. He was an Italian, and for many years was tortured with the gout. This valetudinarian took a fancy into his head, that, for his own amusement, he would write supposititious travels; and, from the aid of books and his own imagination, he composed a most voluminous work. He writes in the first person, which induces an unwary reader to believe that CARRERI actually visited all the people and countries he describes. But the fact is well known, that his imaginary travels were composed when sitting in his elbow chair, with his feet wrapped in flannel. STRUYS is likewise quoted as an authority for the existence of tailed-men; but he gives them a more respectable tail; for he makes it more than a foot long †: He adds, that this tail was covered with red hair, and was somewhat similar to that of an ox. This tailed man, he farther asserts, assured him, that the tail was a result of the climate; for all the natives of the southern part of the island had tails. LINNAEUS, and some other authors of learning and respectability, have given credit to these and similar relations.

We are told by DAMPIER, that, in the island of Mindanao, one of the principal and most southerly of the Philippines, the inhabitants are of a middle stature; that their limbs are slender, their bodies thin and straight, their visages oval, their foreheads flat, their eyes
small

* Tom. 5. p. 68.

† Voyag. de Struys, tom. 1. p. 100.

small and black, their noses short, their mouths large, their lips red and thin, their teeth and hair black, their colour tawny and more yellow than some of the other Indian tribes; that the women are handsome and fairer than the men; that their visages are longer, and their features pretty regular, except the nose, which is flat and short; that their limbs are slender, and their hair long and black; and that, in general, the men are alert and ingenious, but much addicted to robbery and idleness. From the *Lettres Edifiantes*, we learn, that the natives of the Philippine islands have a resemblance to the Malays, who formerly conquered these islands; that the nose is short, the eyes large, the complexion is of a yellowish olive colour, and their language and customs are nearly the same.

The island of Formosa lies to the north of Manilla, and is not far distant from the province of Fokien in China. These islanders, however, have no resemblance to the Chinese. STRUYS tells us, that the men of this island, particularly those who live in the mountains, are small in stature; that their faces are flat; that the women have full coarse breasts, and a beard like the men; that their ears are naturally long, and their length is augmented by heavy shells which they use as pendants; that their hair is long and black, and their complexion of a blackish yellow colour; and that, though inclined to indolence, they are dexterous in managing the bow and the javelin, excellent swimmers, and run with incredible swiftness. With regard to a very extraordinary custom which takes place in this island, all travellers are agreed; namely, that the women are not allowed to bring forth children till after the age of thirty-five, though they are permitted to marry long before that period. RECHTEREN, speaking of this strange custom, expresses himself in the following manner: ‘ After marriage, the women are not allowed to be mothers till they
‘ have

‘ have completed their thirty-fifth or thirty-seventh year. When
 ‘ they are pregnant before this period, their priestesses trample with
 ‘ their feet upon the women’s bellies, and in this manner force them
 ‘ to miscarry ; an operation much more painful and dangerous than
 ‘ a natural labour. But it is disgraceful, and even a high crime, to
 ‘ allow a child to come into the world before the age prescribed.
 ‘ I have seen women who had sixteen of these forced miscarriages,
 ‘ and were only permitted to bring forth their seventeenth child *.’

The Ladrone or Mariana islands are farthest removed from the eastern coast ; they are inhabited by a people rude and unpolished. Till the arrival of the Europeans, Father GOBIEN relates, they had never seen artificial fires ; and that they were greatly astonished when MAGELLAN exhibited to them the wonderful effects of this subtle but active element. Their colour is tawny, though rather more fair than that of the natives of the Philippian islands ; they are a more robust race of people than the Europeans ; and they are tall and well-proportioned. Though they feed almost solely on roots, fruits, and fishes, they are fat and corpulent ; but their corpulency prevents them not from being nimble and active. Their longevity is so great, that the age of an hundred years is not esteemed to be extraordinary among these people, without experiencing either disease or sickness. In general, the hair of these islanders is crisped †, their nose and eyes are large, and their complexion is similar to that of the Indians. The natives of Guan, one of these islands, have long black hair, a large nose, white teeth, thick lips, a long visage, and a ferocious

* Les Voyag. de Rechteren dans le Recueil des Voyag. de la Comp. de Holl.
 tom. 5. p. 96.

† L’Hist. des Isles Mariannes, par le P. Gobien.

aspect. They are also very robust; and their height, it is said, is often seven feet *.

The land of the Papous and New Guinea lie to the south of the Mariana islands, and to the east of the Moluccas. We are told by ARGENSOLA, that the Papous are as black as the Caffres; that their hair is crisped; and that their faces are meagre, and have a disagreeable aspect. Some of these people, however, are as fair as the Germans; but they have weak eyes †. LE MAIRE informs us, that the natives of this country are very black, savage, and brutal. They wear rings in their ears and noses, bracelets of mother of pearl on the wrists and above the elbows, and cover their heads with bonnets made of the barks of trees, and painted with various colours. They are a robust and well proportioned people. In the chase they are exceedingly swift; and, as they know not the use of iron, clubs, lances, and spears made of hard wood, are their only weapons. Like dogs, they employ their teeth as offensive weapons. The appearance of the women is disgusting to Europeans. They have breasts so long that they hang down to the navel, and very prominent bellies. Their limbs and arms are small; their visages resemble those of apes; and their features are truly hideous ‡. DAMPIER farther tells, that the inhabitants of the island of Sabala, in New Guinea, are a species of tawny Indians, with long black hair, and whose manners differ not from those of the other eastern isles; and that, beside these, who seem to be the chief inhabitants of New Guinea, there are likewise Negroes with woolly crisped hair ||.

When

* Dampier, tom. 1. p. 378.; and Cowley's Voyage round the World.

† L'Hist. de la Conquête des îles Moluques, tom. 1. p. 148.

‡ Les Voyag. de la Comp. de Holl. tom. 4. p. 648.; and La Navigation Australe de Jacques le Maire.

|| Dampier, tom. 5. p. 82.

When mentioning another of these islands, called *Garret-Denys*, DAMPIER remarks, that the natives are robust, black, and well formed; that they have large roundish heads, and short crisped hair, which they cut in different fashions, and paint with various colours; that they have large round faces, and flat broad noses; that, however, their countenances would not be so disgusting, if they did not thrust through their nostrils a peg about an inch thick, and four inches long, each end of which rests upon their cheek-bones, and a small part of the nose only appears around this absurd ornament; and that in their ears similar pegs are worn *.

On the coast of New Holland, which is situated in the 16th degree of south latitude, the natives are perhaps the most miserable of the human species, and make it approach nearest to the condition of brutes. They are erect, meagre, and tall. They have thick eyebrows, a round fore-head, and very large heads. Their eye-lids are perpetually half shut, a habit contracted in infancy to defend their eyes from the assaults of the gnats; and, as they seldom open their eyes, they cannot see objects at a distance by any other means than by elevating their heads, as if they were looking at something far above their own height. Their noses and lips are thick, and their mouths are large. It should appear that they pull out the two fore-teeth of the upper-jaw; for in neither sex, nor at any particular period of life, are these teeth to be seen. They are beardless; their visage is long, without exhibiting a single agreeable feature; their hair is black, short, and crisped; and their skin is equally black as that of the Guinea Negroes. Their only clothing consists of a piece of the bark of a tree tied round their waist, with a handful of long herbs placed in the middle. They erect no houses; and, with-
out

* Dampier, p. 102.

out any covering, they sleep on the ground. Men, women, and children, associate promiscuously, to the number of twenty or thirty. A small fish, which they catch in reservoirs made with stones in arms of the sea, constitutes their chief nourishment; and with bread, and every species of grain, they are totally unacquainted *. In another part of the coast of New Holland, about the twenty-second or twenty-third degree of south latitude, the natives appear to be of the same race with those now described. They have the same defect in their eyes, and are ugly and disgusting. Their bodies are tall and slender; their skin is black, and their hair crisped †.

In a voyage to Botany Bay, in New South Wales, Governour Phillip, commander of a squadron fitted out to establish a settlement for British felons in that remote region, informs us, that the natives, though in so rude and uncivilized a state as not to have hitherto made the smallest attempt to defend themselves by clothes from the inclemency of the weather, have some ideas of sculpture. In all the excursions of Governour PHILLIP in this island, or rather immense continent, the representations of animals, of shields, of weapons of war, and even of men, were seen carved upon the rocks. These figures were rough, but completely expressed the objects they were intended to represent. The figures of fishes were frequent; and, in one place, the form of a large lizard was sketched out with considerable accuracy. On the top of a hill, the figure of a man, in the attitude commonly assumed by these people when they begin to dance, was executed in a still superior manner. The bodies of these people, in general, smell strongly of oil; and their dark colour is greatly augmented by dirt. They discover, however, emotions of disgust when they meet with effluvia to which their organs have not been accus-

VOL. II.

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* Dampier, tom. 2. p. 171.

† Ibid. tom. 4. p. 134.

tomed. Bread and meat they never refuse, but generally throw them away soon after. But every present of fish they always accept with avidity. Observing the ground to be raised in several places, like a kind of rude graves, Governour PHILLIP had some of them opened. In one, a jaw-bone was found not fully consumed; but, in general, they contained ashes only. From the position of these ashes, it appeared that the body must have been laid horizontally, and raised from the ground a few inches, or as high as to admit a fire underneath.

Before drawing any general conclusions from all these facts and descriptions, we shall take a cursory view of some of the Asiatic and African nations.

In traits and features, the Moguls, and other natives of the peninsula of India, nearly resemble the Europeans, except some slight differences in colour. Though, in the Indian language, *Mogul* signifies *white*, the skin of the Moguls is olive. The Mogul women are very handsome, and bathe often. They are, like the men, of an olive colour; and, contrary to the common run of European women, their legs and thighs are long, and their bodies short*. We are told by TAVERNIER, that, after passing Lahor, and the kingdom of Cashmire, the Mogul women have no hair on any part of their bodies, and that the men have very scanty beards†. The Mogul women, says THEVENOT, are chaste, and very fruitful. They bring forth their children with so much ease, that they not unfrequently walk the streets the day after they have been delivered. In the kingdom of Decan, he adds, that the men marry at ten, and the women

* Les Voyages de la Boulaye le Gouz, p. 153.

† Voyages de Tavernier, tom. 3. p. 80.

women at eight years of age ; and that they frequently have children at this early period of life. But women who have born children so soon, generally cease to bear after they see their thirtieth year, when they become wrinkled, and have all the appearances of old age. Some of these women puncture their skins in imitation of flowers, and paint them with the juices of plants, which makes the skin seem to be stuffed with flowers *.

In Bengal, the natives are more yellow than the Moguls ; and their manners are likewise very different. The women of Bengal, instead of being chaste, are thought to be the most lascivious and debauched in all India. In this country, a great slave-trade, both of males and females, is carried on ; and many eunuchs are made, both by a simple privation of the testes, and by a total amputation of the parts. The natives of Bengal are beautiful and handsome ; they are fond of commerce ; and, in their manners, they are exceedingly mild †.

On the Coromandel coast, the natives are blacker than those of Bengal ; they are also less civilised, and go almost naked. On the Malabar coast, the natives are still more black. They are of the same size with the Europeans, and have long, smooth, black hair. The women wear gold rings in their noses ; and men, women, and girls, bathe promiscuously in ponds made in the middle of their towns. Though black, or at least exceedingly brown, the women are comely and handsome ; and they are often married at the age of eight years ‡.

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Among

* Tavernier, tom. 3. p. 34.

† Voyages de Pyrard, p. 34.

‡ Recueil des Voyages, tom. 6. p. 461.

Among the different nations of India, we meet with very singular, and often whimsical customs. The Banians refuse to eat any thing that has been animated. They are afraid to kill the smallest insect, and will not destroy the louse that bites them. To feed the birds, fishes, and insects, they throw rice and other grains upon the ground and into the rivers. When they accidentally meet a fisher or hunter, they earnestly intreat him to desist from his employment. If he still persists, they offer him money for his gun or his net; and, if he does not comply, to frighten the fishes, they trouble the waters; and to put the birds and other game to flight, they raise the most hideous cries *.

In Calicut, there is a band of nobles, called *Naires*, whose sole profession is that of arms. Though of an olive colour, they are handsome and comely. They are hardy, tall, brave, and very dexterous in the management of their weapons. They lengthen their ears to such a degree, that they hang down to their shoulders, and sometimes even lower. These Naires are allowed to have only one wife; but the women may have as many husbands as they chuse. Father TACHARD informs us, that, in the class or cast of Nobles, a woman has sometimes ten husbands, whom they consider as slaves subjected to their beauty. This privilege is confined to ladies of rank; for women of inferior stations are allowed but one husband. Women of this condition, however, take care to alleviate this seeming hardship by their intercourse with strangers, to whose embraces they abandon themselves without reserve, and their husbands presume not to challenge them. The daughters are prostituted by their mothers even before they arrive at a proper age. The common people of Calicut are smaller, worse shaped, and more ugly than the

Naires

* Voyages de Struys, tom. 2. p. 225.

Naires or nobles *. Among the latter, some men, as well as women, have legs as thick as the body of an ordinary person. This deformity is not a consequence of any accident ; for they have it from their birth. The skin of these legs is rough and hard like a wart. Notwithstanding this cumbersome deformity, the persons subjected to it are both active and nimble. This thick-legged race have not multiplied greatly either among the Naires or the other Indians. They appear, however, in other places, and particularly in the island of Ceylon †.

Though not equally black, the natives of Ceylon resemble those of the Malabar coast ‡. Their ears hang down to their shoulders ; their aspect is mild ; and they are an alert, dexterous, and vivacious people. The ordinary inhabitants go almost naked ; and the women, according to a pretty general custom in India, have their bosoms always uncovered ||. In the northern part of the island of Ceylon, we meet with a species of savages called *Bedas*, who occupy a small district only. The spot they inhabit is covered entirely with wood. Here they conceal themselves in such a manner, that to discover any of them is extremely difficult. Their complexion, like that of the Europeans, is fair, and sometimes red. Their language seems to have no analogy with that of any other peculiar to India. They have neither villages nor houses ; and with the rest of mankind they have no intercourse. Bows and arrows are their only arms, with which they kill wild boars, stags, and other animals. They do not dress their meat, but season it with honey.

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* Pyrard, p. 411.

† Ibid. p. 416. Recueil des Voyages de la Comp. de Holl. tom. 4. p. 362.

‡ Pigafetta Ind. Orient. p. 1. 9.

§ Recueil des Voyages, &c. tom. 7. p. 19.

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* Pyrard, p. 411.

† Ibid. p. 416. Recueil des Voyages de la Comp. de Holl. tom. 4. p. 362.

‡ Pigafetta Ind. Or. ent. p. 1. 9.

§ Recueil des Voyages, &c. tom. 7. p. 19.

Ormus, of Bascia, and of Balascia, are very brown and tawny ; while those of Cheshmur, and other provinces of Persia, where the heat is not so intense as at Ormus, are fairer ; and those of the northern provinces are still more white *. According to the Dutch voyagers, the women in the islands of the Gulph of Persia are brown and yellow, and by no means beautiful. Their visages are large, and their eyes ugly. They resemble the Indian women in some of their manners and practices, as that of wearing rings in the cartilages of their noses, and of passing a gold pin through the skin of the nose, near the eyes †. This custom of piercing the nose, and ornamenting it with rings and other trinkets, extends much farther than the Gulph of Persia ; for many of the Arabian women wear rings in their noses ; and the men, by way of gallantry, often salute their wives through these rings, which are sometimes large enough to encircle the whole mouth ‡.

We are told by XENOPHON, that the Persians, in general, were a thick and a fat people. MARCELLINUS, on the contrary, says, that, in his time, they were meagre and thin. With this last author OLEARIUS agrees, and adds, that they are strong and hardy ; that their colour is olive ; and that their hair is black, and their noses aquiline ||. CHARDIN informs us, that the blood of the Persians is naturally gross ; for the Guebres, a remnant of the antient Persians, are ugly, ill-made, and rough skinned. The inhabitants of the provinces which border upon India, because they never intermix with
other

* La Description des Provinces Orientales par Marc Paul, p. 22, 39. Pyrard, tom. 2. p. 256.

† Recueil des Voyages de la Comp. de Holl. tom. 5. p. 191.

‡ Voyage fait par ordre du Roi dans la Palestine, par M. D. L. R. p. 260.

|| Voyage d'Olearius, tom. 1. p. 501.

other tribes, are almost equally clumsy and deformed as the Guebres. In other parts of the kingdom, however, the blood of the Persians is now highly refined by frequent alliances with the Circassians and Georgians, two nations who, in personal beauty, surpass all the world. In Persia, there are few men of rank who have not been produced by Circassian or Georgian mothers. Even the King himself, on the female side, is generally sprung from one or other of these nations. As it is many ages since this mixture commenced, the Persian women have become, though they do not rival the ladies of Georgia, extremely beautiful and handsome. The men are, in general, erect and tall; their complexion is ruddy and vigorous, and they have an engaging deportment and a graceful air. The mildness of the climate, joined to their temperate mode of living, contribute greatly to improve the beauty of their persons. This quality they do not inherit from their fathers; for, without the aid of commixture with fine women from other countries, the Persian men of rank, who are descendants of the Tartars, would be very deformed and ugly. But now the Persians are a refined and an ingenious people. Their imagination is extremely fertile. Though warlike, they are very fond of the arts and sciences. Their tempers are soft and ductile, and they are vain and ambitious of praise. They are exceedingly voluptuous, and much addicted to gallantry. They are prodigal and luxurious; and, to commerce and oeconomy, they are equally strangers*.

In Persia, fine women, of all complexions, are common. On account of their beauty, they are imported thither by the merchants from every country. The white women are brought from Poland, Russia, Circassia, Georgia, and the frontiers of Great Tartary. The tawny

females are transported from the dominions of the Mogul, and from the kingdoms of Visapore and Golconda, and the blacks from Melinda and the coasts of the Red Sea *. The inhabitants of Persia, Turkey, Arabia, Egypt, and of Barbary, in the time of Mahomet and his successors, extended their dominions by invading immense territories, and, by intermixing with the natives of all these regions, became exceedingly diversified both in manners and appearance. The Turks, the Persians, and the Moors, have acquired a considerable degree of civilization and polished manners. But the Arabs, in general, still continue in a state of rudeness, and of lawless independency. Like the Tartars, the Arabs roam about from place to place, without any government or law, and almost without any social intercourse. Their chiefs authorise rape, theft, and robbery. They have no estimation for virtue, and glory in almost every species of vice. Though inured to labour, the Arabs live in extreme misery. They have neither bread nor wine; neither do they cultivate the ground. Instead of bread, they use some wild grain, which they mix with the milk of their cattle †. They keep flocks of sheep, goats, and camels, which they lead from place to place till they meet with a sufficient pasture. Here they erect their tents; and live with their families till the grass is consumed, when they decamp, and go in quest of another fertile station ‡. Though their mode of living be uncomfortable, and their food very simple, the Arabs are a robust and a strong people: Their stature is not diminutive, and they are, in general, pretty handsome. But as most of them go either entirely naked, or slightly covered with a tattered shirt, their skins are scorched with the heat of the sun ||.

Those

* Tavernier, tom. 2. p. 368.

† Les Voyages de Villamon, p. 603.

‡ Thevenot, tom. 1. p. 330.

|| Voyages de Villamon, p. 604.

Those who inhabit the coasts of Arabia Felix, and the island of Socotora, are of a smaller stature, and their complexions are ash-coloured or tawny. The Arabs paint their lips, arms, and the most conspicuous parts of their bodies, with a deep blue colour *. This paint, which they lay on in little dots, and make it penetrate the flesh by puncturing the skin with needles, can never be effaced †. This custom is also frequent among the Negroes who carry on trade with the Mahometans. The Arabian girls who live on the frontiers of Tunis and Tremesen, to improve their beauty, paint their bodies with cyphers of a blue colour. This effect they produce by means of vitriol and the point of a lancet. In this practice they are followed by the country Africans, but not by those who live in towns. Some of these, indeed, paint a small flower on the fore-head, their cheek, or their chin, with the smoke of galls and saffron, which produces a fine black. They likewise blacken their eye-brows ‡. The Arabian women of the Desert, La Boulaye informs us, paint their hands, lips, and chin, of a blue colour; that, in general, they wear rings of gold or of silver, about three inches diameter, in their noses; that, though born fair, their complexions are injured by a continual exposure to the sun; and that the young girls are very agreeable, and sing almost perpetually ||.

‘ The Arabian princesses and ladies,’ another traveller tells us, ‘ whom I was permitted to see, were extremely handsome, beautiful, and fair, because they are always covered from the rays of the sun. But the common women, beside their tawny complexions,

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* Pigafettae Ind. Orient. part 1. p. 25.

† Voyages de Pietro della Valle, tom. 2. p. 269.

‡ L’Afrique de Mariniol, tom. 1. p. 88.

§ Voyages de la Boulaye le Gouzy p. 318.

' are very much blackened by the sun ; their form is exceedingly
 ' disagreeable ; and, except those natural attractions which always
 ' accompany youth, I could never perceive any thing in their ap-
 ' pearance that could please the fancy. These women puncture
 ' their lips with a kind of needles, and cover them with gun-powder
 ' and the gall of oxes, which penetrate the skin, and render them blue
 ' and livid during life. They employ the same art on the angles of
 ' the mouth, on each side of the chin, and upon the cheeks. They
 ' paint the eye-lids with a black powder, and draw a black line from
 ' the corner of each eye, with a view to make them appear more
 ' expanded ; for the chief beauty of the eastern women consists in
 ' large and prominent eyes. Among the Arabs, female beauty is
 ' expressed by saying that she has the eyes of the antelope. They
 ' always compare their mistresses to this sprightly animal ; and black
 ' eyes, and the eyes of the antelope, are the principal topics of their
 ' love-songs. The antelope is indeed a most beautiful, and a hand-
 ' some creature. In its aspect it has a degree of innocent timidity,
 ' which has a great resemblance to the modesty and apprehension
 ' natural to young women. They puncture their arms and hands,
 ' and form upon them the figures of animals, &c. and paint their
 ' nails of a reddish colour. With the same colour, the men likewise
 ' paint their hair and the tails of their horses. The women pierce
 ' their ears in several places, to which they hang rings and broaches.
 ' They also wear bracelets on their arms and legs *.' To this ac-
 count it may be added, that the Arabs are very jealous of their
 wives ; and that, though they either purchase them, or carry them
 off by force, they treat them with gentleness and respect.

Though adjacent to the Arabs, and though governed by similar
 laws,

* Le Voyage fait par ordre du Roi dans la Palestine, par M. D. L. R. p. 260.

laws, the Egyptians have very different manners and customs. For example, in all the towns and villages along the Nile, there are young girls destined by the public for the pleasure of travellers; without any obligation to pay for the indulgence. For this strange species of hospitality they have houses filled with these girls; and with rich men, when about to die, it is reckoned a pious deed to found and endow houses for this charitable purpose. The Egyptian women are very brown, but have fine lively eyes. They are pretty tall; their dress is not agreeable; and, in their conversation, they are exceedingly tiresome*. They are said to be very prolific†. Notwithstanding the many salubrious qualities ascribed to the periodical overflowings of the Nile, GRANGER tells us, that the air of Egypt is unfavourable to health; that diseases of the eyes are very frequent, and so difficult to cure, that the patients generally lose their sight; that there are more blind persons in Egypt than in any other country; and that, during the overflowings of the Nile, the greatest part of the inhabitants are tormented with obstinate and deleterious dysenteries‡.

The Egyptians of both sexes are generally of an olive colour; and, the higher we ascend from Cairo, the people become more tawny, till we arrive at the confines of Nubia, where they are nearly as black as the Nubians themselves. The principal vices of the Egyptians are idleness and cowardice. During the day, their chief employment is drinking coffee, smoking tobacco, sleeping, and chattering in the streets. Though grossly ignorant, they are fantastically vain, affect to despise all other nations, and are much offended when
any

* Les Voyages du P. Vansleb. p. 43.

† Les Voyages du Sieur Lucas, p. 83.

‡ Ibid. tom. 3. p. 194.; and P. Vansleb. p. 42.

any person advises them to send their children to Europe for instruction in the arts and sciences*.

The nations on the coasts of the Mediterranean Sea, from Egypt to the Western Ocean, and those who inhabit the internal regions of Barbary, as far as Mount Atlas, consist of various races, as those of the original natives, Arabs, Vandals, and Spaniards. In more ancient times, the Romans and Egyptians peopled these territories with men of very different qualities. For example, the inhabitants of the mountains of Arras have no resemblance in their aspect and complexion to the adjacent tribes. Instead of being tawny, their complexion is white and ruddy; and their hair is of a deep yellow; but that of the neighbouring nations is black. From these and similar circumstances, Dr SHAW thinks it probable that they are descendants of the Vandals, who, after their expulsion, took refuge in parts of these mountains†. In the kingdom of Tripoli, the women, though adjacent to those of Egypt, have not the smallest resemblance to them. The former are tall, and consider height of stature as an essential characteristic of beauty.

It is an affectation among the Moorish women to have their hair so long as to reach to their heels; and those whose hair is shorter, use false locks ornamented with ribbons. They paint the hair of their eye-lids with black lead, and consider the dark colour produced by it as a great mark of beauty. This custom is both general and very ancient: It was practised by the ladies of Greece and of Rome, as well as by those of the East‡. Even in Europe, the Moorish would be reckoned handsome. The skin of their children is

* Lucas, tom. 3. p. 194.; and P. Vansleb, p. 42.

† Shaw's Travels.

‡ Ibid.

is very fair and delicate; and though, by exposure to the sun, the boys soon become swarthy; yet the girls, by keeping more within doors, preserve their beauty till the age of thirty, when they generally cease to bear children. As a recompense for this early sterility, they are often mothers at the age of eleven, and grandmothers at that of twenty-two; and, as they live as long as the Europeans, they commonly see several generations *. From MARMOL's description of these different countries, it appears, that, in Barbary, the inhabitants of the mountains are white, and that those of the plains and sea-coasts are brown and tawny †. With regard to the Numidians, he informs us, that they are rather tawny than black; that, though the men be meagre, the women are pretty fair and jolly ‡; but that the natives of Guaden, at the extremity of Numidia, and on the frontiers of Senegal, are rather black than tawny ||; that, on the contrary, the women of the province of Dara are fresh-coloured and beautiful §.

From the above historical enumeration, it appears, that all the people who live between the 20th and 35th degree of north latitude, that is, from the Mogul empire to Barbary, and even from the Ganges to the western coast of Morocco, differ not much from each other, except in such varieties as have arisen from intermixtures with more northern nations, who have occasionally conquered and over-run some of those vast regions. In this extensive territory, which stretches, nearly within the same parallels, about two thousand leagues, the people are brown or tawny, but pretty handsome and comely. If, in the next place, we scrutinize those who live under more temperate climates, we shall find, that the inhabitants of the
northern

* Shaw's Travels.

† Marmol, tom. 2. p. 536.

|| Ibid. p. 7.

‡ Ibid. tom. 3. p. 6

§ Ibid. p. 11.

northern parts of the Persian and Mogul empires, the Armenians, the Turks, the Mingrelians, the Georgians, the Circassians, the Greeks, and the Europeans in general, are not only the fairest, but the most handsome people on this globe; and that, however remote Cashmire may be from Spain, or Circassia from France, the natives of those countries, who are nearly at equal distances from the equator, have a great resemblance to each other. BERNIER remarks, that the people of Cashmire are famous for their beauty. They are equally handsome as the Europeans, and have not a feature peculiar to the Tartarian race. Their women are beautiful; and it is a common practice with strangers, when they visit the Mogul court, to marry Cashmirian women, in order to procure children by them as fair as genuine Moguls *.

The blood of Georgia is still more refined than that of Cashmire. In the former country, an ugly countenance is hardly to be seen. With regard to the Georgian women, Nature has adorned them with a profusion of graces. They are slender-waisted, tall, handsome, and their faces are extremely beautiful †. The men are also very handsome ‡. Nature has made them ingenious; and, if neglect of proper education, joined to debauched manners, did not render them very ignorant, they might make a considerable progress in the arts and sciences. But there is not a country, perhaps, in the universe, where libertinism and drunkenness have arrived at a degree so disgraceful as in Georgia. We are told by CHARDIN, that even the clergy are much addicted to wine; and that they keep a number of female slaves, whom they use as concubines. That he was informed,

* Voyage de Bernier, tom. 2. p. 281.

† Chardin, p. 204.

‡ Il Genio vagante del Conte Aurelio degli Anzi, tom. 1. p. 170.

informed, he adds, by the prefect of the Capuchins, that the Patriarch of Georgia openly declares, that the man who does not intoxicate himself at their great festivals, as those of Christmas and Easter, is unworthy of the name of a Christian, and deserves to be excommunicated from the church *. However, notwithstanding all these vices, the Georgians are a civil, grave, humane, and peaceable people.

It is remarked by STRUYS,* that the women of Circassia are also exceedingly fair and beautiful. Their complexion exhibits the most delicate tints. Their fore-heads are smooth and large. Without the assistance of art, their eye-brows are so fine, that they have the appearance of curved threads of silk. Their eyes are large, alluring, and full of animation. Their noses are handsome, and their lips are vermilion itself. Their mouths are small, but the perpetual residence of smiles. Their chins are the termination of the most perfect oval. Their throat and neck are extremely handsome; and their skin is as white as snow. Their hair is of a beautiful black colour. Their stature is tall, and their movements graceful. They wear a small black cap, upon which they fasten a roller of the same colour. But the widows, instead of this roller, wear the bladder of an ox fully blown up with air, which gives them a ludicrous appearance. The women of inferior station, in summer, wear a shift only, which is commonly blue, red, or yellow, and open to the middle of the body †.

We are informed by TAVERNIER, that the women of Circassia and Comania, like those of Georgia, are extremely handsome; that

VOL. II.

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they

* Chardin, p. 205.

† Struys, tom. 2. p. 75.

they preserve the freshness of their complexions till the age of forty-five or fifty; and that they are all industrious, and frequently employed in the most laborious offices. Some of their laws with regard to marriage are singular. If a husband is displeased with his wife, and makes the first complaint, the superintendant of the district sends for the wife, sells her, and procures another for the husband. The same privilege is enjoyed by the wife if she makes the first complaint *.

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According to the relations of travellers, the Mingrelians are equally handsome and beautiful as the Circassians or Georgians, and seem to belong to the same race of people. ‘In Mingrelia,’ CHARDIN remarks, ‘there are women extremely handsome, of a majestic air, whose form and visage are enchanting, and their aspect attracts every beholder. Those who are less handsome, or advanced in years, daub their fore-head, eye-brows, cheeks, nose, and chin, with a coarse paint. Others paint their eye-brows only, and are very attentive to their dress, which resembles that of the Persians. They use a veil, which covers only the crown and back part of the head. Though lively, civil, and affectionate, they are very perfidious; for there is no wickedness which they will not perpetrate, in order to procure, to preserve, or to get rid of their gallants. The men likewise possess many bad qualities. All of them are trained to robbery, which they study both as a business and an amusement. With great satisfaction they relate the depredations they have committed; and, from this polluted source, they derive their greatest praise and honour. In Mingrelia, falsehood, assassination, and theft, are good actions; and whoredom, bigamy, and incest, are esteemed as virtuous habits. The men marry two or
‘ three

* Tavernier, tom. I. p. 469.

‘ three wives at a time, and keep as many concubines as they chuse. In this country, husbands are not jealous of their wives. When a wife is detected in the act of infidelity, he has only a right to demand a pig from the gallant, who commonly eats a share of it in company with both husband and wife. To have many wives and concubines they consider as a laudable practice; because it enables them to beget the greater number of children, whom they either sell for gold, or exchange for wares and provisions *.’ The Mingrelian slaves are not very dear. A man, from twenty-five to forty years of age, may be purchased for fifteen crowns; and, when farther advanced, for eight or ten. The finest girls, from thirteen to eighteen, cost twenty crowns only, a woman about twelve, and children only three or four †.

The Turks, who purchase great numbers of these female slaves, are so intermixed with Armenians, Georgians, Arabians, Egyptians, and Europeans, that it is almost impossible to distinguish the original natives of Asia Minor, Syria, and the rest of Turkey. The Turks, in general, are robust, and pretty well made ‡. Among these people, crooked or deformed individuals are rarely to be seen. Most of their women are also very handsome and beautiful. They are exceedingly fair, because they seldom go abroad, and never without their veils ||. ‘ There is not,’ says BELON, ‘ a woman in Asia, however mean her condition in life, who has not a complexion fresh as a rose, and whose skin is not fair, delicate, and as smooth as velvet. Before they go to bathe, they make an unguent of Chian earth, with which they anoint their whole bodies. Some of them paint the eye-brows of a black colour; and others eradicate the hairs

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* Chardin, p. 77.

† Ibid. p. 105.

‡ Thevenot, tom. 1. p. 55.

|| Ibid. tom. 1. p. 105.

‘ with rusma, and paint artificial eye-brows in the form of a black crescent, which gives them a beautiful appearance at a distance, but, when viewed more near, they are very ugly. This custom, however, is extremely antient*.’ He adds, that, in Turkey, neither males nor females suffer the hair to grow on any part of their bodies, except on the head and chin ; that they compose an ointment of equal quantities of rusma and quick-lime, diluted in water, which they apply immediately before entering the warm bath ; that, when they begin to sweat, the hairs fall off by rubbing with the hand, and the skin remains smooth and soft, without the smallest vestige of hair †. In Egypt, he farther remarks, there is a shrub called *alcanna*, the leaves of which, when dried and pounded, make a yellow or reddish paint, with which the women tinge their hair, hands, and feet ‡.

The Turkish women, to make their eye-brows of a deeper black, employ a preparation of tutty. They bathe often, use perfumes, and exert every effort to improve their beauty. The present natives of Judea resemble the other Turks. But they are more swarthy than those who live in Constantinople, or on the coasts of the Black Sea, in the same manner as the Arabians are browner than the Syrians, because they inhabit a more southern climate. This observation is equally applicable to the Greeks : The inhabitants of the northern districts are fairer than those of the islands, or of the southern provinces. The Greek women, in general, are still more beautiful and vivacious than the Turkish. The Greeks esteem large eyes, and elevated eye-brows, in either sex, as great points of beauty || ; and, it is not unworthy of remark, that, in all the medals and busts
of

* Observ. de Pierre Belon, p. 199.

† Ibid.

‡ Ibid. p. 136.

|| Observ. de Belon, p. 200.

of the antient Greeks, the eyes are much larger than in those of the antient Romans.

The inhabitants of Greece, of Naples, of Sicily, of Corfica, of Sardinia, and of Spain, who are situated nearly under the same latitude, have complexions extremely similar. All these people are more swarthy than the French, the British, the Germans, the Moldavians, the Circassians, and the other natives of the northern parts of Europe, till we arrive at Lapland, where, as formerly remarked, we meet with men of a very different appearance. The Spaniards, though meagre, are a handsome people. Their features are regular, and their eyes beautiful: But their complexion is swarthy and yellowish. Their children, some time after birth, continue to be fair; but the operation of the sun and air soon renders them yellow and tawny*.

We are informed by LINNAEUS, that the Goths are tall; that their hair is as white as silver; and that the iris of their eye is bluish. He adds, that the Findlanders are muscular and fleshy; that their hair is of a whitish yellow colour; and that the iris of the eye is of a deep yellow†. The women of Sweden are said to be very prolific. RUDBECK tells us, that the Swedish women generally produce eight, ten, or twelve children; and that eighteen, twenty, twenty-four, and even thirty, are not uncommon. That the men, he adds, often exceed the age of a hundred years; that some of them arrive at a hundred and forty; and that one lived a hundred and fifty-six, and another a hundred and sixty-one years‡. The author of the *Historical Voyages of Europe* confirms the observation of RUDBECK,
that

* Relation du Voyage d'Espagne, p. 187.

† Linn. Faun. Suec. p. 1.

‡ See Olavi Rudbekii Atlantica.

that the Swedes are more famous for longevity than any other nation of Europe. He adds, that he saw several men who, he was assured by good authority, exceeded their hundred and fiftieth year *. He ascribes this longevity of the Swedes to the salubrity of the air. With regard to Denmark, he makes the same remark: The Danes, says he, are robust and tall; of a lively and florid complexion, and, from the wholesomeness of the air they respire, live to great ages: The Danish women are likewise fair, handsome, and very prolific †. Previous to the reign of CZAR PETER I. the Russians were almost completely barbarous. They were born slaves; they were grossly ignorant, brutal, cruel, and had neither courage nor urbanity of manners. Men and women went promiscuously into the hot baths; and, like the Laplanders, after coming out of these baths, which were uncommonly hot, plunged themselves into cold water. Their food was extremely coarse ‡. But, even at this unrefined period, the women had the address to colour their cheeks, to pull the hairs from their eye-brows, and to paint artificial ones. The Carelians and Ingrians, who inhabit the northern parts of Muscovy, have constitutions vigorous and robust. In general, their hair is white or fair §. They resemble the Finlanders, and speak the same language.

The nations who inhabit the northern parts of Africa, from the Mediterranean to the Tropic, have already been described. The people beyond the Tropic, from the Red Sea to the Ocean, a vast extent of country, are a kind of Moors; but they are so swarthy, that they seem to be almost black. In general, the men are very brown; the women are somewhat fairer, well-made, and do not want beauty.

* Les Voyages Historiques de l'Europe, tom. 8. p. 229. † Ibid. tom. 8. p. 279

‡ Relation curieuse de Muscovie, p. 181.

§ Nouveaux Memoires sur l'Etat de Grand Russie, tom. 2. p. 64

ty. There is a great number of Mulattoes among these Moors, who are of a blacker colour; because they are produced from Negroe women, who are purchased by the Moors, and with whom they have many children *. Under the 17th or 18th degree of north latitude, we meet with the Negroes of Nubia and of Senegal, both on the coast of the Red Sea, and on that of the western ocean. From the 18th degree of north to the 18th of south latitude, the whole inhabitants of Africa, except the Ethiopians or Abyssians, are perfectly black. Hence that portion of the globe occupied by this race of men comprehends an extent of territory, parallel to the Equator, of about nine hundred leagues in breadth, and considerably more in length: Beyond the 18th or 20th degree of south latitude, however, the natives cease to be negroes.

The natural colour of the Ethiopians is brown or olive, like that of the southern Arabs. They are tall, and have regular features, fine eyes, well proportioned noses, thin lips, and white teeth. The Nubians, on the contrary, have flat noses, thick lips, and their skin is extremely black †. These Nubians are a species of Negroes, and have a great resemblance to those of Senegal. The Ethiopians are a half polished people. They wear garments of silk and of cotton. They are very negligent in the culture of their lands; because the citizens and vulgar are oppressed and plundered by the nobles. Each of these classes live separately in their own hamlets or villages. They are fond of crude victuals; and the second course in their feasts consists of raw flesh, which they consider as the greatest delicacy. They have vines, but they make no wine. Their only beverage is an acid composition of tamarinds and water. Their knowledge

* Marmol, tom. 3. p. 29, 33.

† Lettres Edifiantes, Recueil 4. p. 349.

knowledge of the arts and sciences is ~~very~~ limited; for their language is rude, and their mode of writing is imperfect, that they require several days to finish a common letter, though the characters of their alphabet are more beautiful than those of the Arabians*.

Admiral **DRAKE**, in his voyage round the globe, mentions a singular fact, which has since been confirmed by **HASSELQUIST**. On the frontiers of the desert of Ethiopia, he tells us, there are men called *Acridophagi*, or locust-eaters. They are black, meagre, very nimble, and of small stature. During the spring, infinite numbers of locusts are transported into their country by hot winds which blow from the west. As they have neither cattle nor fish, they are under the necessity of feeding upon these locusts, of which they amass vast quantities. These they cure with salt, and preserve them for food through the whole year. This miserable species of nourishment is said to produce strange effects: These men seldom reach the age of forty years. When they approach to this period of life, caterpillars are engendered under their skin, which at first create a great itching, become so prodigiously numerous, that their whole flesh swarms them. These insects first devour the belly, then the breast, and continue their ravages till they eat the whole flesh from the bones.

In that tract of Ethiopia, which stretches to Cape Gardufu, there are immense deserts. This easterly part of Ethiopia is almost entirely uninhabited. Ethiopia is bounded on the south by the Bedwins and some other nations, all of whom observe the Mahometan law, which corroborates the opinion, that the Ethiopians have originally sprung from the Arabians, who have even spread themselves along the coasts of Melinda; for the inhabitants of these coasts are only tawny,

tawny, and follow the religion of Mahomet *. The natives even of Zanguebar are not black, and most of them speak the Arabic language. This country, though it lies under the Torrid Zone, is not excessively hot; and the hair of the natives, like that of the Negroes, is black and crisped †. Upon the whole of this coast, as well as in Mosambique and Madagascar, we find some white men, who must unquestionably have originated from other countries.

To form a just idea, however, of the varieties to be met with among these black nations requires a more minute examination. Upon comparing the testimonies of travellers, it appears, in the first place, that the varieties among the blacks are as numerous as those among the whites. Both have their Tartars and Circassians. The natives of Guinea are very ugly, and emit an intolerable odour. Those of Sofala and Mosambique have no bad smell, and are very beautiful. The blacks, therefore, may be divided into two different and principal races, that of the Negroes, and that of the Caffres. The first comprehends the blacks of Nubia, Senegal, Cape Verd, Gambia, Sierra-Leone, the Teeth and Gold Coasts, that of Juda, Benin, Gabon, Loango, Congo, Angola, and of Benguela, as far as Cape Negro. Under the second may be comprehended all the nations from Cape Negro to the point of Africa, where they are known by the appellation of *Hottentots*, and all those on the eastern coast, within the same latitude, as the territories of Natal, Sofala, Monomotapa, Mosambique, and Melinda: The blacks of Madagascar and of the adjacent islands are likewise not Negroes, but Caffres. These two races of men differ more from each other in colour than in features, hair, skin, or odour: Their dispositions and manners are also very differ-

VOL. II.

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* Pigafetta, p. 56.

† Marmol, p. 107.

ent. On a closer examination of the people who constitute these two races, we shall find as many varieties among the blacks as among the whites, and an equal number of shades from brown to black as, in the other race, from brown to white.

To begin with the nations and countries to the north of Senegal, and, proceeding along the coasts, the different people which have been described by travellers shall be separately described.

It is certain, in the first place, that the natives of the Canary islands are not negroes; for it is ascertained by voyagers, that the original inhabitants of these islands were tall, handsome, and of a vigorous complexion; that the women were beautiful, and had fine hair; and that the inhabitants of the southern parts of each island were more olive than those of the northern *. In the history of his voyage to Lima, DURET informs us, that the antient inhabitants of the island of Teneriff were robust and tall, but tawny and meagre, and that, in general, their noses were flat †. These people, we see, possessed nothing in common with the Negroes, if their flat noses be excepted. In the same latitude with these islands, the natives of Africa are Moors. They are very tawny; but, like the islanders, they belong evidently to the race of whites.

At Cape Blanc, the inhabitants are Moors, and follow the Mahometan religion. They wander, like the Arabs, from place to place, pasturing their camels, horses, oxen, goats, and sheep. They carry on a traffic with the Negroes, who give them two or three slaves for

* L'Histoire de la premiere decouverte des Canaries, par Bontier et Verriert, p. 251.

† L'Hist. gen. des Voyages, par M. l'Abbé Prevot, tom. 2. p. 230.

a camel, and eight or ten for a horse *. These Moors supply us with gum Arabic, which they have a practice of dissolving in their milk. They seldom use flesh as a diet, and never kill their cattle till they are about to die of disease or of old age †. The river Senegal divides the Moors from the Negroes. The Moors, who inhabit the north side of this river, are only tawny; but the Negroes, who live on the south side of it, are perfectly black. The Moors wander about with their flocks; but the negroes are stationary, and dwell in villages. The former are free and independent; but the latter are the slaves of cruel tyrants. The Moors are meagre, small in stature, and have a puny aspect; but they are a sly and an ingenious people. The negroes, on the other hand, are large, plump, and well-proportioned; but they are a simple and a stupid race.

Both on the south and north sides of the river Senegal, there is a species of men distinguished by the appellation of *Foulies*, who form a shade between the Moors and Negroes, and, perhaps, have been produced by a commixture of the two nations. These Foulies are not so black as the Negroes, but much more brown than the Moors; and thus hold a middle rank between the two. They are also more civilized than the negroes, follow the religion of Mahomet, and are hospitable to strangers ‡.

Mulattoes form the chief inhabitants of the Cape de Verd islands. They sprung from the Portuguese who originally settled there and the native Negroes of these islands. They are called *Copper-coloured Negroes*; because, though their features are the same with those of the Negroes, they are not so black, but of a yellowish colour. They are a handsome and an ingenious people, but very idle and indolent.

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* Voyage du le Maire, p. 46.

† Ibid. p. 66.

‡ Ibid. p. 75.

They procure their food chiefly by fishing and hunting. Their dogs are trained to kill the wild goats, which are very numerous in those islands. Their wives and daughters are delivered, without reluctance, to the embraces of strangers, for presents of very small value *.

The southern banks of the Senegal exhibit the first genuine Negroes. These people, as well as those who live in that tract of country comprehended between this river and that of Gambia, distinguish themselves by the name of *Faloffs*. They are exceedingly black, handsome, and of a goodly stature. Their aspect is by no means so disagreeable as that of the other Negroes. The features of some of them, and particularly those of the women, are very regular. They entertain the same ideas of beauty as the Europeans; for they are fond of fine eyes, small mouths, thin lips, and well proportioned noses. They differ, however, with regard to the basis of the picture; for they esteem a black shining colour as indispensibly necessary to constitute a beauty. Their skin is very soft and fine; and, if we abstract our prejudices in favour of particular colours, their women are as beautiful as in any other country in the world. In general, their females are handsome, gay, active, and amorous to an extreme degree. They show a particular attachment to white men, whom they cherish with ardour, both to gratify themselves, and in the hope of procuring presents. In their intercourse with foreigners, their husbands lay them under no restraint. But, though they offer their wives, daughters, and sisters to strangers, and think their honour injured by a refusal; yet, when their wives transgress with men of their own nation, their jealousy excites such ferocity of passion, that they not unfrequently beat, and even cut themselves with
fabres.

* Voyages de Roberts, p. 387.

fabres. Those women, notwithstanding, seldom want a tobacco-pipe out of their mouths; and, when heated, their skin emits a disagreeable odour, though not so offensive as that of the other Negroes. They are fond of dancing to the sound of the drum and calabash. In these dances, all their movements consist of lascivious postures. They bathe often, and file their teeth, in order to make them more equal. Most of the young women engrave figures of animals, flowers, &c. on their skin, a practice common in Otaheite and other islands in the southern ocean.

Among the Negroe women, when travelling, it is a general practice to carry their children on their backs. To this cause, some writers ascribe the flat noses and big bellies of the Negroes. The mother, in raising the child by sudden jerks, makes its nose strike against her back; and the child, to avoid these frequent blows, keeps its head back and its belly forward *. Their hair is black, and crisped like curled wool. Their hair and colour constitute the chief difference between them and other men; for their features are not more different from those of the Europeans, than the Tartarian visages differ from those of the natives of Britain. We are assured by Father TERTRE, that the flat noses of the Negroes are occasioned by a general practice of mothers, who depress the noses of their new-born infants, and squeeze their lips, in order to thicken them; and that those children who escape these operations, have elevated noses, thin lips, and fine features. The Negroe women are very prolific. They bring forth with ease, and require neither midwife nor accoucheur. Child-bearing, with them, is attended with no troublesome consequences; for they fully recover their strength by repoling themselves
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* Le Maire, p. 144.; Le Père du Jaric, p. 364.; et Le Père du Tertre, p. 493.

for a day or two. They are excellent nurses, and treat their offspring with great tenderness and affection.

The Negroes who inhabit the Cape de Verd coast, and the island of Goree, are very black, but handsome. Though robust and strong, they are indolent, and cultivate neither vines, corn, nor fruits. Fishes and millet constitute their principal articles of food ; for they seldom eat flesh. The Europeans they compare to horses, because they eat herbs. But they are so passionately fond of spirits, that they often sell their parents, their children, and even themselves, for brandy *. They wear only a cotton garment, which covers them from the middle of the body to one half of the thigh ; because, they allege, the heat of the climate prevents them from using any more clothes †.

Like the Negroes of Guinea, those of Sierra-Leone are of a black colour, though less deep than that of the natives of Senegal. They paint their bodies with red and other colours. They also paint a ring round their eyes of a white, yellow, or red colour, and make different coloured streaks upon their faces. Many of them cut figure, of plants and animals upon their skin. Their women are still more debauched than those of Senegal. Though many of them are common prostitutes, they incur neither censure, nor the smallest dishonour. Both men and women wear ear-rings made of teeth, horns, shells, bits of wood, &c. which often weigh three or four ounces. Some pierce their nostrils, or upper lips, for the purpose of suspending similar ornaments. Their clothing consists of an apron made of the bark of trees, and covered with the skins of apes ; and to those skins they fix little bells. Their beds are made of rush-

mats.

* Voyages de M. Gennes, p. 15.

† Lettres Édiifiantes, Recueil 11. p. 48.

mats. They eat fish, or flesh when it can be procured; but their chief food is yams and bananas*. Their principal passion is for women; and they are idle and inactive. Though in the near neighbourhood of rich valleys, hills covered with trees, green and fertile fields, beautifully intersected with brooks and rivers, they often continue to occupy wild and barren places. But their stupidity and indolence render them insensible to every pleasure and advantage of this kind.

The Negroes of Guinea, though they have vigorous constitutions and enjoy good health, seldom arrive at old age. A Negroe of fifty years is a very old man. Their premature intercourse with the females may be one cause, at least, of the shortness of their lives. When very young, their children are allowed to indulge in every species of debauchery†. The Negroes of the islands of Annobona, St Thomas, &c. resemble those on the adjacent continent. Men and women go promiscuously naked, except a small apron round their middle‡. On the coasts of Arada and Juda, the Negroes are not so black as those of Senegal, Guinea, and Congo. To all other meat they prefer the flesh of dogs. At their feasts, a roasted dog is commonly the first dish presented to their guests. This taste is not peculiar to the Negroes; for the savages of North America, and of some Tartarian nations, are equally fond of the flesh of dogs.

We are informed by PIGAFETTA, that the Negroes of Congo are less black than those of Senegal. Though, in some individuals, the

* *Indiae Orient. par. 2. in qua Johannis Hugonis Linistotani, &c. Navigatio*, p. 11.

† *Le Voyage de Guinée, par Bosman*, p. 143.

‡ *Pyrard*, p. 16.

the hair is red ; yet, in general, it is black and crisped. The men are of a middle size. Some of them have brown eyes ; in others, they are of a greenish colour. Their lips are not very thick ; and, in their features, they have a great resemblance to the Europeans *.

They have very singular customs in certain provinces of Congo. For example, when a man dies in Loango, they place his corpse, in a fitting posture, on an amphitheatre raised about six feet above the ground. He is then dressed in his best garments, and fires are kindled around him. In proportion as the moisture is absorbed by the clothes, he is covered with fresh ones, till the body is perfectly dry. After this, he is buried with great solemnity. In the province of Malimba, the husband is ennobled by the wife. Upon the death of the King, if he leaves only a single daughter at the age of puberty, she becomes absolute mistress of the kingdom. Her reign is begun by making a tour through her dominions. In her passage through the different towns and villages, all the men are obliged to appear before her, and she singles out the individual whom she fancies most to pass the night with her. When returned from her journey, she sends for the man who best pleased her, and instantly marries him. Immediately after marriage her power ceases, and devolves upon the husband. These facts are extracted from the Travels of M. DE LA BROSSE, along the coast of Angola, in the year 1738. He adds a fact not less singular. ‘ These Negroes,’ he remarks, ‘ are extremely vindictive, of which I shall give a convincing proof. They daily demanded of us some brandy for the use of the King and chief men of the town. One day this request was denied, and we had soon reason to repent it ; for all the English and French officers having gone to fish on a small lake
‘ near

* Indiac Orient. part 1. p. 5.; Drake's Voyage, p. 110.

‘ near the sea-coast, they erected a tent for the purpose of dressing
 ‘ and eating the fishes they had caught. When amusing themselves
 ‘ after their repast, seven or eight negroes, who were the chiefs of
 ‘ Loango, arrived in sedans, and presented their hands, according to
 ‘ the custom of the country. These Negroes privately rubbed the
 ‘ hands of the officers with a subtle poison, which acts instantaneously
 ‘ ly ; and, accordingly, five captains and three surgeons died on the
 ‘ spot.’

In Senegal, Gambia, Cape de Verd, Angola, and Congo, the Negroes are of a finer black than those of Juda, Issigni, Arada, and the neighbouring provinces. When in health, they are totally black ; but, when sick, they become copper-coloured, or yellowish *. The Negroes of Angola are preferred in the French islands, on account of their strength, to those of Cape de Verd : But, when heated, they emit a smell so rank and offensive, that they infect the places through which they pass for more than a quarter of an hour. The Negroes of Cape de Verd do not smell so strong as those of Angola : They have likewise a finer skin ; they are more handsome ; their features are softer, and their dispositions more gentle †. In Guinea, the Negroes are robust, and very fit for cultivating the ground, and other laborious employments. Those of Senegal are not so strong ; but they are more ingenious, and better adapted for domestic servants ‡. We are informed by CHARLEVOIX, that the Negroes of Senegal are the most handsome and docile ; that the Bambaras are larger, but that they are all thieves ; that the Aradas are the best cul-

VOL. II.

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tivators

* *Nouv. Voy. aux îles de l’Amérique*, tom. 4. p. 138.

† *L’Hist. des Antilles*, par le Père du Tertre. p. 463.

‡ *Nouv. Voy. aux îles de l’Amérique*, tom. 4. p. 116.

tivators of the earth; that the Congos are the smallest in stature; that they are excellent fishers, but much addicted to desertion; that the Nagos are the most gentle and humane, the Mondongos the most cruel and ferocious, the Mimes the most resolute, but capricious, and very apt to despair; and that the Creole or Mungrel Negroes, from whatever nations they originate, retain little of their parents, but the colour and the abject spirit of slavery. They are more ingenious, but more slothful and debauched than the Negroes of Africa. CHARLEVOIX adds, that the genius of the Guinea Negroes is very limited; that some of them appear to be almost entirely stupid, being unable to reckon beyond the number three; that their memories are extremely limited; the past and the future being equally unknown to them; that some of them are possessed of humour, and make tolerable mimics; that they are very cunning, and would die rather than reveal a secret; that they are gentle, humane, simple, credulous, and superstitious; but that they are brave, faithful, and, if properly trained to war, would make excellent soldiers *.

The Negroes seem not to be possessed of much genius; but their feelings are very acute. They are melancholy or gay, slothful or laborious, enemies or friends, according to the treatment they receive. When well fed, and not abused, they are contented, chearful, and ready for every kind of employment. But, when oppressed and maltreated, they become peevish, and not unfrequently die of melancholy. They are exceedingly sensible both of benefits and of abuse. Against those who injure them, they entertain a mortal hatred. But, when they have an affection for a master, to show their zeal and attachment, there is not an office, however hazardous, which they will not

* Hist. de St Dominique, par le Père Charlevoix.

not execute with intrepidity. By nature, they are affectionate, and ardently love their children, friends, and countrymen*. Without any motive but that of compassion, they freely distribute the little they possess to the indigent and necessitous.

The ingenious and humane COUNT DE BUFFON, when treating of this subject, makes the following manly reflections: ‘ The unfortunate Negroes, as appears from their history, are endowed with excellent hearts, and possess the seeds of every human virtue. I cannot write their history, without lamenting their miserable condition. Is it not more than enough to reduce men to slavery, and to oblige them to labour perpetually, without the capacity of acquiring property? To these, is it necessary to add cruelty and blows, and to abuse them worse than brutes? Humanity revolts against those odious oppressions which result from avarice.—The Negroes are forced to labour; and yet the coarsest food is dealt out to them with a sparing hand. They support, say their obdurate task-masters, hunger without inconvenience; a single European meal is sufficient provision to a Negroe for three days; however little they eat or sleep, they are always equally strong, and equally fit for labour†. How can men, in whose breasts a single sentiment of humanity remains unextinguished, adopt such detestable maxims? How dare they, by such barbarous and diabolical arguments, attempt to palliate those oppressions which originate solely from their thirst of gold? But, let us abandon those hardened monsters to perpetual infamy, and return to our subject.’

We know little of the inhabitants of the coasts and interior parts

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of

* Hist. des Antilles, p. 483.

† Hist. de St. Dominique, p. 468.

of Africa, from Cape Negro to Cape de Voltes, an extent of about four hundred leagues. Thus far, however, we know that these men are not so black as the other Negroes, and that they resemble the Hottentots, with whom they border on the south. On the contrary, the Hottentots are well known, and have been described by many voyagers. They are Caffres, and would be of a tawny colour only, if they did not bedaub their skin with black paint and grease. M. KOLBE, however, regards them as genuine Negroes. He informs us, that all of them have short, black, crisped, and woolly hair *. M. KOLBE, however, tells us, that their colour is not totally black, but olive, though they employ every art to darken their skin. Their dispositions are likewise different from those of the Negroes; for the latter are cleanly sedentary, and easily reconciled to servitude. But the Hottentots are disgustingly nasty; they are a wandering independent people, and very jealous of their liberty.

The inhabitants of the Cape of Good Hope are described by GAMA, who arrived in the Bay of St Helena in the year 1497, as being blackish, of small stature, and having an aspect extremely disagreeable. He adds, that the sound of their voice resembled that of fighting; that their clothing was the skins of beasts; and that they armed themselves with bludgeons hardened with fire, and pointed with the horn of some animal †. The Dutch voyagers tell us, that the savages north of the Cape are a smaller people than the Europeans; that they are of a reddish brown colour; that they are extremely ugly, and increase their blackness with paint ‡. In another place, they inform us, that the colour of the Hottentots resembles
that

* Description du Cap de Bonne Esperance, p. 95.

† Hist. gen. des Voy. par l'Abbé Prevôt, tom. 1. p. 22.

‡ Voyages de la Comp. de Hollande, p. 218.

that of Mulattoes ; that their countenances are very disagreeable ; that they are of a middle stature ; that they are meagre, and exceedingly fleet in the chace ; and that, when speaking, their voice resembles the clucking of a Turkey cock * : Father TACHARD tells us, that though the hair of the Hottentots be, in general, woolly, like that of the Negroes, many of them have long hair which hangs upon their shoulders. He adds, that some of them are as white as the Europeans, but that they disguise their natural colour by covering their bodies with grease and the powder of a certain black stone ; and that the women, though born fair, paint themselves black with a view to please the men †. Ovington says, that the Hottentots are more tawny than the other Indians ; that they have some resemblance to the Negroes in features and colour, only they are not so black ; neither is their hair so much crisped, nor their noses so much flattened ‡.

It is apparent, from these and many other testimonies, that the Hottentots are not real Negroes, but blacks approaching to whiteness, in the same manner as the Moors are whites approaching to blackness. These Hottentots are a singular race of people. Their females, who are generally much smaller than the men, have an excrescence, or broad hard skin, which arises from the top of the os pubis, and hangs down, like an apron, till it reaches the middle of their thighs ||. All the women who are natives of the Cape are subject to this deformity, which they willingly uncover to any person who wishes to examine it. The men are all half eunuchs, not by nature, but

* Voyages de Spitzberg, p. 443.

† Le Premier Voy. du Prêtre Tachard, p. 108.

‡ Voyage d'Ovington, p. 194.

|| Descript. du Cap, par M. Kolbe, tom. 1. p. 91. and Voyage de Courlai, p. 291.

but by a most absurd custom of cutting out, about the age of eight years, one of their testicles. M. KOLBE saw this operation performed. The circumstances with which this religious ceremony is accompanied are singular. The priest rubs the boy with grease taken from the entrails of a sheep; they lay him on his back, bind his hands and feet, and some of his friends hold him fast in that position. The priest then proceeds, and with a sharp knife cuts out the left testicle. In its place, he puts a ball of grease of nearly the same size, accompanied with some medicinal herbs. The wound is then sowed up with a needle made of the bone of some small bird, and a thread from the tendon of a sheep. The patient is then untied, and the priest rubs the whole body of the boy with grease so copiously, that it forms a kind of crust. In the next place, the operator, with his nails, makes furrows in this crust of grease, from one end of the body to the other, and then discharges his urine upon them. After this operation he again fills up the furrows with fresh grease. These preparations being finished, the boy is abandoned, and left alone in a condition resembling death rather than life. He is then obliged to creep, in the best manner he can, into a hut erected near the place where the operation was performed. In this miserable hovel, he either dies or recovers without assistance, or any other nourishment than the grease with which he is encrusted. In two days, he generally recovers, issues from his hut, and returns to his relations*.

Though all the Hottentots have flat noses, this would not happen to them, if their mothers did not compress them immediately after birth; for they consider prominent noses as great deformities. Their lips are very thick, their teeth are white; their eye-brows are bushy, their heads large, their bodies meagre, and their limbs slender.

Their

* Descript. du Cap, par Kolbe, p. 275.

Their existence seldom exceeds forty years. This limited duration of their lives is chiefly occasioned by the nastiness in which they continually wallow, and the putrid flesh which constitutes their principal food. The Dutch, says TAVERNIER, carried off a Hottentot girl a few days after birth, brought her up among themselves, and her colour continued to be as white as that of any European. From this fact he draws the natural conclusion, that all the Hottentots would be equally fair, if they did not daub their bodies with black paint and grease.

In the territory of Natal, which stretches along the African coast beyond the Cape of Good Hope, the natives differ greatly from the Hottentots. They are better made, and less ugly. Nature has likewise made them blacker. Their visages are oval, their noses well proportioned, and their teeth white. Their general aspect is agreeable, and their hair is crisped. Like the Hottentots, however, they are fond of grease; for they wear bonnets made of tallow. The height of these bonnets is from eight to ten inches. The tallow is well refined. They apply but little of it at a time, and mingle it so completely with their hair, that it never falls off*. M. KOLBE tells us, that these people do not stammer in their speech like the Hottentots; that they build houses, cultivate the ground, and sow a species of maize, of which they make a fermented liquor†. Beyond Natal are the territories of Sofala and Monomotapa, where, according to PIGAFETTA, the natives are black, but taller and thicker than the other Caffres. Those of Monomotapa, we are told by the Dutch voyagers, are black, tall, handsome, and have fine features. The girls wear no clothes but a piece of thin cotton stuff upon their middle.

* Dampier, tom. 2. p. 393.

† Descript. du Cap, tom. 1. p. 136.

middle. When married, however, they put on garments. Though very black, these people differ from the Negroes. Their features are not so ugly; they emit no bad smell; and they can endure neither hard labour nor servitude.

The inhabitants of Madagascar and of Mosambique are more or less black. The hair of the natives of Madagascar is not so much crisped as those of Mosambique. Neither of these people are genuine Negroes. Both men and women go perfectly naked. They eat the flesh of elephants, and sell the ivory to merchants *. Madagascar is inhabited by blacks and whites; the latter of whom, though tawny, seem to be a different race. The hair of the former is black and crisped; but that of the latter is more fair, less crisped, and much larger. It is remarked by FRANCIS CAUCHE, that these whites are probably of European extraction; for none of them whom he saw had flat noses, like the Chinese. He likewise informs us, that the Madagascar whites are fairer than the Castilians; that their hair is long; that even the blacks are not flat-nosed, like those on the continent; and that their lips are not thick. There are also many persons in this island of a tawny or olive colour, who probably proceed from a commixture of the whites and blacks. We are told by the same traveller, that the natives round the Bay of St Augustine are tawny; that they have no beards; that their hair is smooth and long; that they are a tall and handsome people; and that, though they probably never heard of Mahomet, the males are all circumcised †. The first European settlement on this island was established
by

* *Recueil des voyages*, tom. 3. p. 623.; *Le Voy. de Moquet*, p. 265.; et *La Navigation de Jean Hugues Lintfot*, p. 20.

† *Voyage de François Cauche*, p. 45.

by the French; but it was soon abandoned*. Upon their arrival they saw the white men formerly mentioned; and they perceived that the blacks had a great respect for the whites†. Madagascar is a very populous island, and abounds in cattle and good pasturage. Both sexes indulge much in debauchery; and public prostitution is not reckoned dishonourable. They are fond of singing, dancing, and similar amusements. Though naturally indolent, they know and practise some of the mechanical arts. They have no furniture in their houses, but sleep upon mats. Notwithstanding this circumstance, they have husbandmen, carpenters, smiths, potters, and even goldsmiths. They eat their meat almost raw; and, after singeing the hair, they devour the skins of their oxen. The vulgar go nearly naked; but drawers or petticoats of cotton or of silk are used by the more opulent‡.

The inhabitants of the interior regions admit not of any accurate description, because we have too little knowledge of them. Those whom the Arabians call *Zingues* are black, and nearly in a savage state.

From the authorities which have been quoted, it appears that the Negroes are a different species of blacks from the Caffres. It is still more apparent, however, that the differences in colour are the genuine effects of climate; and that the peculiarities in features have a great dependence upon the customs and practices observed by different nations, as those of flattening the nose, pulling the hair from the eye-brows, making the ears unnaturally long, the lips thick, the

VOL. II.

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* Voyage de Flacour.

† Voyage de M. Delon.

‡ Le Voyage de Flacour, p. 90.; Struys, tom. 1. p. 32.; Pyrard, p. 38

face broad, &c. We cannot have a stronger evidence of the influence of climate upon the colour of the human skin, than to find, under the same latitude, and distant from each other above one thousand leagues, a race of men so similar as those of Nubia and of Senegal; and that the Hottentots, who have sprung from the blacks, are the whitest people in Africa, solely because the country they inhabit is the coldest.

The natives of Madagascar are called *Malegaches* or *Madecasses*. They are portly in their persons, and generally exceed the middle stature. In their countenances, striking marks of good nature and frankness are exhibited. They discover no desire of learning any thing which has not a relation to the simplest wants of nature. An uncommon degree of carelessness and apathy renders every thing unsupportable to them which requires any exertion of mind. They are sober, sprightly, and active, and spend their lives in alternate rest and amusement. To the Malegache, the present moment is to be enjoyed; he seems not to be susceptible of foresight; and he entertains not an idea that any man can give himself uneasiness about futurity. These islanders are perfectly free beings, and, in general, enjoy health of body and tranquillity of mind. The Malegache is his own absolute master. He has no restraint on his freedom. He acts and does what he pleases, except what may be injurious to his fellow creatures. He never attempts to assume an empire over the minds or actions of his neighbours. Each individual adopts his own mode of living, in which no body ever thinks of disturbing him.

In Madagascar, the inhabitants are divided into a great number of tribes, which are all governed by particular chiefs. The lands are not divided, but belong to those who take the trouble of cultivating

vating them. Rice constitutes their chief food, though they likewise use butcher-meat and fish, of which last their seas and rivers afford great quantities, as well as a great diversity of kinds. The power of their chiefs is much limited; but, in the province of Carcanaffi, they are the supposed proprietors of all the land, which they distribute among their subjects, who pay a small quit-rent only. It is not unworthy of remark, that, among these remote islanders, we can trace evident marks of the feudal laws of Europe. In this province, the people have some knowledge of writing. In the Madecasse language, there are a few historical compositions; but their learned men, who are denominated *Ombiaffes*, use solely the Arabic characters. They have written treatises on medicine, geomancy, and judicial astrology. The Ombiaffes are both physicians and forcerers, a conjunction not altogether, even in one of the most enlightened kingdoms of Europe, despised or abolished, as we learn from the late famous narratives of the effects of *animal magnetism in Paris*! The most celebrated of these forcerers come from the province of Matatane, where magical tricks are in the highest estimation. The other natives of the island dread the Matatanes, because they excel in this art of deception. In their public schools, the Ombiaffes teach geomancy and astrology. The Arabs, who made a conquest of this island about three hundred years ago, taught the natives the art of writing; and the knowledge of the Arabian language is pretty general in several provinces of Madagascar.

It might have been expected, that the Mahometan religion should have made a greater progress in this island, especially when we consider, that, for centuries, it has been so much frequented by the Arabs. If we except, however, circumcision, abstinence from pork, and some other insignificant practices, which have little influence on

general manners and conduct, even the descendents of the Arabs have forgotten or neglected the fundamental principles of their religion. They believe not in a future existence. They admit, like the Manichees, of two principles in nature, the one supremely good, and the other extremely wicked. To the former they never address their prayers, but continually do homage and offer up sacrifices to the latter. The island of Madagascar is so contiguous to the coast of Africa, that it has most probably been peopled from that vast continent. But at present, however, the different races are so intermixed, that, to describe all the varieties of them would be a vain and a useless attempt. The real race of Negroes, however, are easily to be distinguished; but it is almost impossible to recognize those who are descended from the whites.

Such of these islanders as possess any erudition relate, that the Creator of the heavens and the earth formed, from the body of the first man, whilst he was asleep, seven women, who were the mothers of their different ranks or casts. The cast of the Rhoandrians were formed from the first man's brain; that of the Aracandrians, from his neck; that of the Ontzatfi, from his left shoulder; that of the Vodziri, from his right side; that of the Ontzoa, from the thigh and the calf of the leg; and that of the Ondeves, from the soles of his feet. According to the parts of the body from which these casts are supposed to have proceeded, their rank and importance are estimated.

It is impossible to peruse this account of the origin of mankind, given by the natives of Madagascar, without recognising a most striking resemblance between it and that delivered to us by the most celebrated legislator MOSES. These eastern people cut seven women out of one man; but MOSES contents himself with cutting one woman

man

man only out of the side of ADAM, our first progenitor ; and EVE, the wife of ADAM, from the present population of this globe, seems to have been perfectly sufficient to accomplish the grand purpose for which she was created.

In Madagascar, a plurality of wives is not uncommon, particularly among the chiefs and other rich individuals. But they never legally marry more than one ; for the rest are considered as concubines. This practice is not attended with those disagreeable consequences which we should naturally expect ; for all these women live together in perfect harmony. Besides, a divorce may be obtained whenever the conjugal union becomes disagreeable either to the husband or wife. In this island, adultery is regarded as a robbery, and receives the same punishment. Hence these people have the greatest respect for a married state. They caution strangers to behave with decency to their wives ; but, what is most ridiculously absurd, they offer the use of their daughters to strangers, and think themselves highly honoured when the offer is accepted.

Before drawing general conclusions, we shall give a short account of the natives of the New World. In the more northerly regions of America, we meet with a kind of Laplanders, who resemble those of Europe, or the Asiatic Samoiedes. They are not numerous ; but they occupy a great extent of territory. Those who inhabit Davis's Straits are of a diminutive stature, have an olive colour, and thick, short legs. They are expert fishers, and eat their fishes and their meat perfectly raw. Their drink consists of water, or the blood of sea-dogs. They are very robust, and live to a great age *. These circumstances constitute, in the most exact manner, the figure, the colour, and the manners

* Hist. Nat. des Iles, p. 189.

manners of the natives of Lapland. What is singular, the Fins, who are adjacent to the Laplanders of Europe, are a white, beautiful, pretty large, and handsome people; and, in the neighbourhood of the Laplanders of America, we meet with a race of men who are tall, pretty white, and possessed of regular features *. Along Hudson's Bay, and to the north of Labrador, the savages are small, ill-made, ugly, and seem not to belong to the same race with the former. Their faces, like those of the savages of Jesso, are almost entirely covered with hair. In summer, they live in tents made of the skins of rein-deer; and, in winter, they dwell under ground, where the men and women sleep promiscuously. In Newfoundland, the savages have a resemblance to those of Davis's Straits. Their stature is low; they have little or no beard, large eyes, flat noses, and broad faces. The traveller from whom this description is taken, adds, that they are very similar to the natives in the neighbourhood of Greenland †. These savages spread over the northern regions of America; but, to the south of them, we fall in with a more numerous and different race, who inhabit Canada, and the countries adjacent, as far as the territories of the Assiniboils. These people are large, robust, and well proportioned; their hair and eyes are black, and their teeth white. Their colour is swarthy; they have scanty beards, and scarcely any hair on their bodies. In the chase they are extremely fleet, and, in travelling, indefatigable. They are a bold, grave, hardy people, and have so great a resemblance to the oriental Tartars, that, if there were no difficulty concerning the possibility of their migration to the New World, we should be apt to conclude that they had sprung from the same origin. They likewise live under the same latitude, which is an additional proof of the powerful influence

* Hist. Nat. des Isles, p. 189.

† Recueil des Voyages au Nord, tom. 3. p. 7.

fluence of climate upon the colour and even the figure of human bodies. Thus, in the northern regions of the New as well as of the Old Continent, we, in the first place, find a race similar to the Laplanders, and also white men with fair hair, like those of the north of Europe; then a hairy race, like the savages of Jesso; and, lastly, the savages of Canada, who stretch as far as the Gulf of Mexico, and have a striking resemblance to the European Tartars. This extensive country, even on its first discovery, was very thinly inhabited. We are told by M. FABRY, who penetrated farther into North America than perhaps any other person, and where the savages, of course, could have suffered no diminution of population from the depredations of Europeans, that, in this region, he frequently travelled two hundred leagues without seeing a human creature, or perceiving any marks which indicated the adjacent country to be inhabited; and that, when he did meet with any Indian huts, they were generally distant from each other about one hundred leagues, and the whole inhabitants seldom exceeded twenty individuals. It is true, that, along the banks of rivers and lakes, they are more numerous, and sometimes even troublesome to the European colonists. In those nations, however, the number of persons seldom amounts to more than three or four thousand, who are spread over a vast extent of country.

The multiplication of the human species, in every climate, depends more upon their union into a social state than any other circumstance. Men, comparatively, would not be so numerous as the wild quadrupeds, if they did not derive mutual support from each other. The bisons, or wild oxen of North America, exceed perhaps, in numbers, those of the human species. But, though population be one result of society, their increased numbers give rise to and strengthen

strengthen their union. Hence it may be presumed, that the want of civilization in the New World is chiefly owing to its being thinly inhabited; for though, originally, each nation exhibited different manners and customs; though some of them were more dastardly, cruel, and savage than others; yet they were all ignorant, stupid, and equally destitute of industry and of arts.

Though North America, however, affords savages only, Mexico and Peru presented to the view of Europeans a civilised people governed by laws and by regal establishments. They were possessed of arts, of industry, and of religion. They lived in cities, where the sovereign, by his authority, maintained order and police. These people, who, at the time of their being discovered, were exceedingly numerous, cannot be regarded as new nations, or, by reason of their remoteness, as originating from individuals who had passed the Atlantic from the Old Continent. The inhabitants of Florida, along the Mississippi, and of the more southerly regions, are more tawny than those of Canada. The paint and oil with which they besmear their bodies, make their colour unnaturally olive. We are informed by COREAL, that, in Florida, the women are strong, tall, and, like the men, of an olive colour; that they paint their arms, legs, and bodies, with different colours, which remain perpetually, because, by the operation of puncturing, they are indelibly engrained in the skin; that the olive colour does not proceed so much from the heat of the climate, as from the oil with which their skins are varnished. He farther tells us, that the women are very active; that they swim across broad rivers, each with an infant in her arms; and that they climb with agility the highest trees*. The whole of these qualities
they

* Le Voyage de Coreal, tom. 1. p. 36.

they possess in common with the Canadians and the other savages of America.

It is remarked by Father du TERTRE, that the Caribbees are, in general, tall, and have an agreeable aspect; that they are healthy, strong, and active; that the countenances of some of them are flat, and their noses depressed: But these features are not natural; they are induced artificially, soon after birth, by the parents. Most of the Caribbees have small, black eyes, long, smooth, black hair, and white teeth. Their colour is tawny or olive. This colour is the effect of Nature, and not of art; for their offspring, who have been brought up in Europe, and denied the use of paint, had the same colour with that of their parents. These savages, though cruel to their enemies, are naturally of a mild and compassionate disposition. Without distinction, they marry strangers, or their own mothers; and many of them possess, at the same time, two sisters, or the mother and daughter, and even their own daughter. With regard to their wives, the men pardon, with the greatest ease, their unfaithfulness; but they never forgive the man who debauches them. They feed upon crabs, turtles, fishes, lizards, and serpents, which they season with pimento, and the powder of manioc *. As they are indolent to excess, and accustomed to an unrestrained independence, they can never, like the Negroes, be reconciled to any regular kind of labour. They exert every effort to preserve their liberty, and, rather than work, they will die of hunger, or of melancholy. The Arrouaguas, who have milder dispositions than the Caribbees, are sometimes employed as labourers, but only in their favourite exercises of hunting or fishing. The Brazilian slaves have nearly the same dispositions. They are not, how-

VOL. II.

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ever,

* Hist. gen. des Antilles, par du Tertre, tom. 2. p. 453.

ever, so indolent, stupid, and melancholy, as the other savages of America. When gently treated, they will submit to any manual operation, except that of cultivating the ground, which they regard as the greatest mark of slavery.

The female Caribbees are fat, and pretty handsome. Their eyes and hair are black, their mouths small, their teeth white; and they are reserved and modest in their behaviour. They use paint; but they do not, like the men, make black lines on their faces and other parts of the body. They wear small aprons only, which are made of cotton, studded with beads, and eight or ten inches in breadth, by five or six in length. Beside these aprons, which they purchase from the Europeans, they employ collars of the same cloth, which hang down upon their breasts. Of this stuff they likewise wear bracelets, and ear-rings composed of strings of beads, or made of a blue stone. The only other ornament peculiar to the women is a buskin of cotton studded with beads, which extends from the calf of the leg to the ankles. When girls attain the age of puberty, they are allowed aprons and buskins, the last of which are made so strait, that they cannot be removed. This apparatus prevents the lower parts of the legs from thickening, and the upper parts, of course, grow larger and stronger*.

In Mexico and Peru, the inhabitants are so intermixed, that it is difficult to see two countenances of the same complexion. The city of Mexico is composed of Europeans, south and north American Indians, Negroes of Africa, Mulattoes, and Mongrels of every species†. The genuine natives are olive and brown, nimble, and well-proportioned.

* Nouv. Voy. aux. Isles, tom. 2. p. 8.

† Lettres Edifiantes, Recueil 11. p. 119.

tioned. On their eye-brows, their hair is scanty, but that on their heads is black and very long *.

We are informed by WAFER, that, in the Isthmus of America, the natives are of a good stature and shape. They have elegant limbs, a full chest, and are remarkably fleet in the chace. The women are short and squat. Both sexes have round faces, flat short noses, large eyes, generally of a grey colour, and very brilliant, prominent fore-heads, thin lips, white teeth, and very regular features. Their hair is long, black, and straight; and, if they did not pull out the hairs, the men would have beards. Their colour is tawny, and their eye-brows are black.

These people, however, are not the only natives of this Isthmus. There are among them a species of white men, whose colour resembles that of milk. Their bodies are covered with a short white down; which, upon the face, is not so thick as to conceal the skin. Their hair, as well as their eye-brows, are perfectly white. These Indians are shorter than the others; and it is singular, that their eyelids have the form of crescents, with the points turned downward. Their eyes are so weak, that, during the day, they have no distinct perception of objects. They see best by the mild light of the moon. They cannot endure hard labour. During the day they sleep, and seldom go abroad but in the night. When the moon shines, they run nimbly through the deepest shades of the forests, with as much ease and safety as other men do in the brightest day. These men, upon the whole, are by no means so vigorous as the other Indians. They constitute a peculiar and distinct race. It sometimes happens, however, that a copper-coloured male and female produce

* Voy. de Coreal, tom. 1. p. 116.

one of these white children. WAFER, from whom these facts are enumerated, tells us, that he had seen children of this kind when they exceeded not their first year *. If this narrative be true, the constitution and the colour of these white Indians must be a kind of disease derived from their parents. But, if they are produced by those of a copper colour, then they must form a distinct race, resembling the Chacrelas of Java, and the Bedas of Ceylon. But, if these whites really proceed from copper-coloured parents, it must likewise be allowed, that the Bedas and Chacrelas have been produced by tawny progenitors ; and that they form not a particular race, but are only individuals, who, by some accidental and unknown cause, have assumed a colour different from that of their original stock.

This last idea seems to be the most probable. The occasional production of whites by Negroe parents adds great force to this theory. We have descriptions of two white Negroes in the History of the French Academy. ‘ I have seen one of them,’ says the COUNT DE BUFFON, ‘ and am assured that they are very frequent among the ‘ Negroes of Africa †. What I have seen, independently of the relations of voyagers, leaves me no room to doubt concerning the origin of these white Negroes. They are only Negroes who have ‘ generated from their race, and not a particular permanent species ‘ of men: In a word, they are among the Negroes what WAFER tells ‘ us the white Indians are among the yellow or copper-coloured ‘ Indians of Darien, and, probably, what the Chacrelas and Bedas are ‘ among the brown Indians of the East. It is singular, that this ‘ variation of Nature takes place only from black to white, and not ‘ from white to black. It is no less singular, that all the people in ‘ the East Indies, in Africa, and in America, where these white men ‘ appear,

* Dampier, tom. 4. p. 252.

† Venus Physique.

‘ appear, lie under the same latitude : The Isthmus of Darien, the
 ‘ Negroe country, and the island of Ceylon, are under the very same
 ‘ parallel. White, then, appears to be the primitive colour of Na-
 ‘ ture, which may be varied by climate, by food, and by manners,
 ‘ to yellow, brown, and black, and which, in certain circumstances,
 ‘ returns, but so greatly altered, that it has little or no resemblance
 ‘ to the original whiteness.’

The two extremes of blackness and whiteness continually approach each other. In her most seemingly perfect exertions, Nature made men white, and, after undergoing every possible shade, she still renders them white. But the specific whiteness is very different from the accidental. We have similar examples in the vegetable kingdom. A white flower, even in the quality of whiteness, is very different from a red one which has been rendered white by frost, or by exclusion from light.

The Indians of Peru, and especially those who live in the plains and along the sea-coasts, are, like the inhabitants of the Isthmus, of a copper colour. But those who occupy the elevated parts of the country between the two ranges of the Cordeliers, are almost as white as the Europeans. In Peru, some parts of the country are a league higher than others, which produces a greater variation on the temperature of the climate than an hundred leagues of latitude. The Indians of Guiana, and along the river of the Amazons, are all more or less of a tawny reddish colour. CONDAMINE tells us, that the differences in the shades are chiefly occasioned by the temperature of the air, which varies from the heat of the Torrid Zone, to the great colds produced by the neighbourhood of the snow * : That the Oma-
 guas,

*- Voy. de la Condamine, p. 49.

guas, and some other savages, flatten the faces of their children by lacing their heads between two boards * ; that others pierce the nostrils, lips, or cheeks, and place in them feathers, the bones of fishes, and similar ornaments ; that most of them bore their ears, and, instead of ear-rings, employ herbs and flowers †. In Brasil, the savages are nearly of the same size with the Europeans ; but they are stronger, and more agile : Neither are they subjected to so many diseases ; and their longevity is great. Their hair is black, and seldom grows hoary with age. Their colour is tawny, or a mixture of red and brown. Their heads are large, their shoulders broad, and their hair is long. They pull the hairs out of their beards, their eyebrows, and all parts of their bodies, which makes them have an uncommon and a ferocious appearance. Their under lip they pierce, and as an ornament insert into it a green stone, or a small polished bone. Immediately after birth, the mothers flatten the noses of their children. The whole of them go absolutely naked, and paint their bodies with different colours. Those who inhabit the sea-coasts are now somewhat civilized by their intercourse with the Portuguese ; but most of those who occupy the interior parts of the country are still savages. A savage people are not to be civilized by force or by slavery. In these savage nations, the missionaries have polished more men than the arms of those princes by whom they were subdued. The ferocity and stubbornness of the savages of Paraguay were conquered by the humanity, the gentleness, and the venerable example of the missionaries. They frequently begged to be instructed in that law by which men were rendered so perfect ; and they often followed its precepts, and united with society ‡. In general, the natives of

Paraguay

* Voy. de la Condamine, p. 72. † Ibid. p. 48.

‡ Voy. de Lery, p. 108. ; Coreal, tom. 1. p. 163. ; Mem. pour servir a l'hist. des Indes, p. 287. ; L'Hist. des Indes, par Maffei, 171. ; Pyrard, tom. 2. p. 337. ; Lettres Edifiantes, Recueil 15. p. 331. &c.

Paraguay are tall and well-proportioned. Their countenances are long, and their skin is olive-coloured *.

We are informed by FREZIER, that the natives of Chili, like those of Peru, are tawny, their colour resembling reddish copper. This colour differs from that of the Mulattoes, who, as they are produced by the commixture of whites and blacks, are of a brown colour, or a mixture of black and white. On the contrary, the South American Indians are yellow, or rather reddish. In Chili, the inhabitants are of a middle size. They have large chests, thick limbs, small eyes, long ears, straight, bushy, black hair, and countenances by no means agreeable. They pull the hairs out of their beards, and lengthen their ears. Though the climate is not hot, they generally wear no clothes, except a skin thrown over their shoulders.

It has been alleged, that, on the confines of Terra Magellanica, and near the extremity of Chili, there exists a gigantic race of men. FREZIER tells us, trusting to the authority of some Spaniards, that these men are nine or ten feet in height. These gigantic men, he remarks, are called *Patagonians*, and live on the eastern parts of the coast. This story of the Patagonians was afterwards considered as fabulous, because the Indians along the Straits of Magellan were found not to exceed the common stature of mankind. This circumstance, he continues, might have deceived FROGER, in his narrative of the voyage of M. DE GENNES; for both species of men are said to have been seen by the crew of the same vessel. The crew of the James of St Malo, we are told, saw, in Gregory Bay, in the year 1709, seven of these giants; and the crew of the St Peter of Marseilles saw six
of

* Coreal, tom. 1. p. 240. and 259.; Lettres Edifiantes, Recueil 11. p. 391.; Ibid. Recueil 11. p. 391.; and Recueil 12. p. 6.

of them, to whom they offered bread, brandy, and wine; which, though they had given presents of arrows to the sailors, and assisted them in bringing the ship's boat ashore, they refused *. As M. DE FREZIER, however, does not say that he had seen any of these gigantic savages, and as the relations concerning them are full of exaggerations upon other subjects, the existence of a race of giants, so high as ten feet, must still remain problematical. The bodies of such men must be eight times the bulk of those of ordinary persons. About five feet is the mean height of the human species; and the extremes seldom exceed a foot above or below this standard. Giants and dwarfs who exceed these terms are accidental varieties only, and not distinct and permanent races. Besides, if these Magellanic giants have any existence, their numbers must be very small; for the savages found along the Straits, and in the adjacent islands, are of a middle size. They are of an olive colour; and they have large chests, squat bodies, thick legs, and straight black hair †. In fine, their stature does not exceed the ordinary size, and, both in colour and hair, they resemble the other Americans.

IN conducting a narrative of this nature, compiled from a multiplicity of voyages written by various authors, and in different languages, it must of necessity, assume a desultory appearance. But, as the great object of this chapter is, to give concise ideas concerning the situation, character, manners, religion, and government of mankind almost from the South to the North Pole, every indulgence is to be expected from an intelligent reader. To accomplish this purpose,

* Voy. de Frezier, p 75.

† Coreal, p. 231. and 284.; l'Hist. de la conquête des Moluques, par Argensola, tom. 1. p. 35. and 255.; Le Voy. le M. de Gennes, par Froger, p. 97.; Les Voy. de la Comp. d'Holl. tom. 1. 651.; Dampier, p. 179.

pose, the quantity of reading is immense; but the use I have made of it, others must determine.

With this view, leaving the west coast of America, to give a cursory account of the inhabitants of some of the islands in the South Sea or Pacific Ocean.

Before proceeding to more particular observations, one general remark cannot escape notice. The natives of the numerous islands scattered through this immense ocean, admit of two obvious and characteristic divisions, namely, the *friendly, generous, and hospitable*; and the *barbarous, brutal*, and

On each of these subjects particular examples can only be exhibited.—At Otaheite and several other islands, the natives, as a mark of intended friendship, uniformly present, like the northern nations of old, green branches of trees. When Captain COOK and his associates anchored in a fine bay, called *Motavai* *, they were instantly surrounded by the natives in their canoes, who exchanged coconuts, bread-fruit, and some small fishes, for beads and similar trifles. ‘The bread-fruit,’ Captain COOK informs us, ‘grows on a tree that is about the size of a middling oak. Its leaves are frequently a foot and an half long, of an oblong shape, deeply insinuated like those of the fig-tree, which they resemble in consistence and colour, and in the exuding of a white milky juice upon being broken. The fruit is about the size and shape of a child’s head; and the surface is reticulated, not much unlike a truffle. It is covered with a thin skin, and has a core about as big as the handle of a small knife. The eatable part lies between the skin and the core:

‘ It is ~~as~~ white as snow; and somewhat of the consistence of new bread. It must be roasted before it is eaten, being first divided into three or four parts. Its taste is insipid, with a slight sweetness, somewhat resembling that of the crumb of wheaten bread mixed with a Jerusalem artichoke *.’

In this voyage, Captain COOK was attended by the celebrated Mr BANKS, (now Sir JOSEPH), and Dr SOLANDER, gentlemen highly qualified for scrutinizing every department of Nature, whether animal, vegetable, or mineral. When they landed, they were amicably received by some hundreds of the inhabitants, though the latter were struck with such awe, that the first who approached crept almost upon his hands and knees. He, however, presented the usual symbol of peace, a green branch of a tree. Captain COOK and his company took a walk for some miles in the woods, attended by a numerous train of natives, who had now relinquished their timidity and become familiar. ‘ As we went along,’ Captain COOK remarks, ‘ we distributed beads and other small presents among them, and had the satisfaction to see that they were much gratified. Our circuit was not less than four or five miles, through groves of trees, which were loaded with cocoa-nuts and bread-fruit, and afforded the most grateful shade. Under these trees were the habitations of the people, most of them being only a roof without walls; and the whole scene realized the poetical fables of Arcadia †.’

A curious custom, though practised by some other islanders, was here exhibited. ‘ Two men,’ says Captain COOK, ‘ of superior rank came on board, and each singled out his friend; one of them, whose name was found to be *MATAHAN*, fixed upon Mr BANKS, and

* Hawkesworth's Narrative of Cook's Voyage, vol. 2. p. 80.

† Ibid. p. 83.

‘ and the other upon me. This ceremony consisted in taking off
 ‘ great part of their clothes and putting them on us. In return for
 ‘ this, we presented each of them with a hatchet and some beads *.’
 After this interchange of presents with TOOTAHAN, the natives, both
 males and females, continues Captain COOK, ‘ attended us to several
 ‘ large houses, in which we walked about with great freedom. The
 ‘ ladies showed us all the civility of which, in our situation, we
 ‘ could accept; and, on their part, seemed to have no scruple that
 ‘ would have prevented its being carried farther †.’ Next day,
 Captain COOK and his associates took leave of their friendly chief,
 and directed their course along the shore. In their walk, they met,
 at the head of a numerous train of people, another chief, called
 TUBOURAI TAMAIDE, with whom amity was established by mutually
 exchanging branches of trees, putting their hands on their left
 breasts, and pronouncing the word *Taio*, which signifies *friend*.
 The chief then invited them to eat, which offer they readily accep-
 ted, and made a hearty meal upon fish, bread-fruit, cocoa-nuts, and
 plantains. ‘ During this visit,’ continues Captain COOK, ‘ a wife
 ‘ of our noble host, whose name was TOMIO, did Mr BANKS the
 ‘ honour to place herself upon the same matt, close by him. TOMIO
 ‘ was not in the first bloom of her youth; nor did she appear to
 ‘ have been ever remarkable for her beauty. He did not, therefore,
 ‘ I believe, pay her the most flattering attention. It happened too,
 ‘ as a farther mortification to this lady, that, seeing a very pretty
 ‘ girl among the crowd, he, not adverting to the dignity of his
 ‘ companion, beckoned to her to come to him. The girl, after some
 ‘ intreaty, complied, and sat down on the other side of him. He
 ‘ loaded her with beads, and every showy trifle that could please her.
 ‘ His Princess, though she was somewhat mortified at the preference

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‘ that

* Hawkesworth's Narrative of Cook's Voyage, vol. 2. p. 84.

† Ibid. p. 85.

‘ that was given to her rival, did not discontinue her civilities, but
 ‘ still assiduously supplied him with the milk of the cocoa-tree, and
 ‘ such other dainties as were in her reach.’ In similar circumstances,
 could any Princess in Europe have conducted herself with more dig-
 nity, politeness, and propriety ?

At first sight, there appears a singular trait in the character of the natives even of Otaheite, and other friendly and placid islanders. They are all arrant thieves, and can pick pockets with the dexterity of the most expert London blackguard*. Their thefts, however, admit of the strongest apology. We do not learn that they steal from each other, but from strangers, who exhibit such uncommon and alluring objects, that the temptation is almost irresistible†. The accuracy and expedition, however, of their police is astonishing. A complaint of this kind is no sooner made to a chief, than he instantly despatches his messengers; and the thieves are apprehended and the stolen articles restored in a few hours. Upon this subject, Captain Cook, with much propriety, remarks, that these people
 ‘ show an intelligence and influence which would do honour to any
 ‘ system of government, however regular and improved‡.’ But, he afterwards remarks, ‘ That the people of this country, of all ranks,
 ‘ men and women, are the arrantest thieves upon the face of the
 ‘ earth ||.’

As an apology for the thievish disposition of these ignorant and innocent people, Captain Cook, with much humanity and good sense, remarks, ‘ That we must not estimate the virtue of these
 ‘ people by the only standard of morality, the conformity of their
 ‘ conduct

* See Hawkesworth's Narrative of Cook's Voyage, vol. 2. p. 87. *et alibi passim.*

† This idea is contradicted, Ibid. p. 170.

‡ Ibid. p. 88.

|| Ibid. p. 100.

' conduct to what in their opinion is right, but we must not hastily
 ' by conclude, that theft is a testimony of the same depravity in them
 ' that it is in us, in the instances in which our people were sufferers
 ' by their dishonesty; for their temptation was such, as to surmount
 ' would be considered as a proof of uncommon integrity among
 ' those who have more knowledge, better principles, and stronger
 ' motives to resist the temptations of illicit advantage. An Indian
 ' among penny knives and beads, or even nails and broken glass, is
 ' in the same state of trial with the meanest servant in Europe among
 ' unlocked coffers of jewels and gold *.'

The principal object of this voyage was to make observations on
 a transit of the planet Venus over the Sun's disk; which, to the im-
 mortal honour of his Majesty GEORGE III. was performed under
 his auspices. This transit happened on the third day of June 1769;
 and the reader may see a particular description of it in the Philoso-
 phical Transactions, vol. 61. part 2. p. 379. *et seqq.*

With regard to *funeral rites*, the people of these islands never bury
 their dead under ground. About this time died an old woman of
 some rank, who was related to TOMIO, which gave our voyagers
 an opportunity of observing how these people dispose of their dead.
 ' In the middle of a small square, neatly railed in with bamboo; the
 ' awning of a canoe was raised upon two posts, and under this the
 ' body was deposited upon a frame. It was covered with fine cloth;
 ' and near it was placed bread-fruit, fish, and other provisions. We
 ' were informed by our friend TUBOURAI TAMAIDE, that the food
 ' was placed there as an offering to their gods. In the front of the
 ' area was a kind of stile, where the relations of the deceased stood
 ' to

* Hawkesworth's Narrative of Cook's Voyage, vol. 2. p. 102. 148.

‘ to pay the tribute of their sorrow ; and under the awning were
 ‘ innumerable small pieces of cloth, on which the tears and the blood
 ‘ of the mourners had been shed ; for, in their paroxysms of grief,
 ‘ it is an universal custom to wound themselves with the shark’s
 ‘ tooth *.’ This custom, of expressing grief by wounding themselves, is not peculiar to any nation. Even in the civilized nations of Europe, extreme grief is often expressed by violently beating the breast, tearing the hairs from the head, and sometimes by actual suicide. The practice of exposing the dead above ground, till the flesh is consumed by putrefaction, and afterwards burying the bones, does not admit of an easy explanation. It is worthy of remark, however, that *ÆLIAN* and *APOLLONIUS RHODIUS* mention a similar custom among the antient inhabitants of Colchis, a country of Asia now known under the appellation of *Mingrelia*. This manner of treating the dead, however, was not extended to both sexes. The men were wrapped in a hide, and hung up in the air by a chain ; but the women were buried in the earth : A distinction which might originate from the extreme jealousy, or rather delicacy, of the Asiatics.

In a morning walk, Mr *BANKS* met a number of natives, whom he discovered to be a band of *musicians*. Having learnt where they were to spend the evening, Mr *BANKS* and the other gentlemen gave their attendance. The band consisted of two players on the flute and three drummers. The drummers accompanied the music with their voices ; and the gentlemen were not a little surprised to discover that *they* were generally the subject of the song. ‘ We did
 ‘ not expect,’ says Captain *COOK*, ‘ to have found, among the un-
 ‘ civilized inhabitants of this sequestered spot, a character which has
 ‘ been the subject of such praise and veneration, where genius and
 ‘ knowledge

* Hawkesworth’s Narrative of Cook’s Voyage, vol. 2. p. 142.

‘ knowledge have been most conspicuous ; yet these were the bards
 ‘ or minstrels of Otaheite. Their song was unpremeditated, and ac-
 ‘ companied with music ; they were continually going about from
 ‘ place to place ; and they were rewarded by the master of the
 ‘ house, and the audience *.’

On the 29th day of June 1769, Captain COOK and the other gentlemen went to the district called *Paparra*, the property of their friends OAMO and OBEREA, where they meant to sleep. ‘ We
 ‘ went on shore about an hour before night, and found that they
 ‘ were both absent, having left their habitations to pay us a visit at
 ‘ Matavai. This, however, did not alter our purpose. We took
 ‘ up our quarters at the house of OBEREA, which, though small,
 ‘ was very neat, and, at this time, had no inhabitant but her father,
 ‘ who received us with looks that bid us welcome. Having taken
 ‘ possession, we were willing to improve the little day-light that was
 ‘ left us ; and therefore walked out to a point, upon which we had
 ‘ seen, at a distance, trees that are here called *Etoa*, which general-
 ‘ ly distinguish the places where these people bury the bones of their
 ‘ dead. Their name for such burying-grounds, which are also
 ‘ places of worship, is *Morai*. We were soon struck with the sight
 ‘ of an enormous pile, which, we were told, was the Morai of
 ‘ OAMA and OBEREA, and the principal piece of Indian architecture
 ‘ in the island. It was a pile of stone-work, raised pyramidically,
 ‘ upon an oblong base, or square, two hundred and sixty-seven feet
 ‘ long, and eighty-seven feet wide. It was built like the small py-
 ‘ ramidal mounts upon which we sometimes fix the pillar of a fun-
 ‘ dial, where each side is a flight of steps. The steps, however, at
 ‘ the sides, were broader than those at the ends ; so that it termi-
 ‘ nated

* Hawkesworth's Narrative of Cook's Voyage, vol. 2. p. 147.

‘ nated not in a square of the same figure with the base, but in a ridge, like the roof of a house *.’

These people have a custom of anointing their heads with an oil expressed from the cocoa-nut, in which some sweet herbs or flowers have been infused. As the oil is generally rancid, the smell is at first very offensive; ‘ and,’ Captain COOK remarks, ‘ as they live in a hot country, and have no such thing as a comb, they are not able to keep their heads free from lice, which the children and common people sometimes pick out and eat: A hateful custom, wholly different from their manners in every other particular; for they are delicate and cleanly almost without example; and those to whom we distributed combs soon delivered themselves from vermin †.’

The custom of *tattooing*, or staining various parts of their bodies by means of small punctures and a kind of lamp-black, is general here, as well as in many other parts of the world. But they seldom or never deform their faces with these marks. ‘ It is strange,’ Captain COOK remarks, ‘ that these people should value themselves upon what is no distinction; for I never saw a native of this island, either man or woman, in a state of maturity, in whom these marks were wanting †.’—Their garments consist of cloth, or matting, of various kinds. The cloth, which is a vegetable mash, like our paper, they wear in dry weather only, because it will not bear wetting; and the matting when it rains. These garments are put on in many different fashions according as fancy directs; for no part of their clothes is cut into shape, nor are any two pieces sewed together. ‘ As
‘ finery,’

* Hawkesworth's Narrative of Cook's Voyage, vol. 2. p. 166.

† Ibid. p. 189

‡ Ibid. p. 191.

‘finery,’ Captain COOK remarks, ‘is always troublesome, and particularly in a hot country, where it consists of putting one covering upon another, the women of rank always uncover themselves as low as the waist in the evening, throwing off all that they wear on the upper part of the body, with the same negligence or ease as our ladies would lay by a cardinal or double handkerchief. And the chiefs, even when they visited us, though they had as much cloth round their middle as would clothe a dozen people, had frequently the rest of the body quite naked. Upon their legs and feet they wear no covering; but they shade their faces from the sun with little bonnets, either of matting or of cocoa-nut leaves. This, however, is not all their head-dress: The women sometimes wear little turbans, and sometimes a dress which they value much more, and which, indeed, is much more becoming, called *Tomou*. The *Tomou* consists of human hair; plaited in threads, scarcely thicker than sewing silk. Mr BANKS has pieces of it above a mile in length without a knot. These they wind round the head in such a manner as produces a very pretty effect, and in a very great quantity; for I have seen five or six such pieces wound about the head of one woman. Among these threads they stick flowers of various kinds*.’ The men likewise ornament their heads with the feathers of the Tropic-bird, and garlands of flowers. Beside flowers, their personal ornaments are not numerous: Both sexes wear earrings, but they are placed on one side only: ‘When we came,’ says Captain COOK, ‘they consisted of small pieces of shell, stone, berries, red peas, or some small pearls, three in a string; but our beads very soon supplanted them all†. The children go perfectly naked;

VOL. II. I i

* Hawkesworth’s Narrative of Cook’s Voyage, vol. 2. p. 192, &c.

† Ibid. p. 194.

‘ked; the boys till they are six or seven years old, and the girls till they are three or four.’

In Otaheite, the houses are all erected in the woods between the sea and the mountains; and no more ground is cleared for each house than is sufficient to prevent the dropping of the branches upon the thatch. Hence from their houses the inhabitants step immediately into the most delightful shades, formerly groves of bread-fruit and cocoa-nut trees, which are intersected, in all directions, by the paths that lead from one house to another. The ground which a house covers is generally a parallelogram of about twenty-four feet long, and eleven wide, over which a roof is raised upon three rows of posts, parallel to each other, one on each side, and the other in the middle. This roof, which is thatched with palm-leaves, consists of two flat sides that terminate in a ridge, exactly similar to the thatched houses in Britain. The utmost height of the inside is about nine feet, and the eaves on each side reach to about three feet and a half of the ground. ‘Below this,’ Captain Cook informs us, ‘and through the whole height at each end, it is open, no part of it being inclosed with a wall.—The floor is covered, some inches deep, with soft hay. Over this are laid mats; so that the whole is one cushion, upon which they sit in the day, and sleep in the night. In some houses, however, there is one stool, which is wholly appropriated to the master of the family. Besides this, they have no furniture, except a few little blocks of wood, the upper side of which is hollowed into a curve, and which serve them for pillows*.’

Their houses are principally employed as dormitories; for, except when

* Hawkesworth's Narrative of Cook's Voyage, vol. 2. p. 195.

when it rains, they eat their victuals in the open air, under the shade of a neighbouring tree. ‘ The^{*} clothes that they wear in the day serve them for covering in the night ; the floor is the common bed of the whole household, and is not divided by any partition. The master of the house and his wife sleep in the middle, next to them the married people, next to them the unmarried women, and next to them, at a little distance, the unmarried men ; the servants, or *Toutours*, as they are called, sleep in the open air, except it rains, and, in that case, they come just within the shed *.’ They have houses, however, of a much larger size, built for the temporary accommodation of a whole district. Some of these are 200 feet long, 30 broad, and, under the ridge, 20 feet high. These houses are built and maintained at the common expence of the district †. ‘ These houses, like those of separate families, have no walls. Privacy, indeed, is little wanted among people who have not even the idea of indecency, either in words or actions ‡.’

The chief food of the natives of Otaheite consists of vegetables. They have no tame animals, except poultry, hogs, and dogs, and these are not numerous. Captain COOK and his associates agreed that a South Sea dog was little inferior to a British lamb, which is probably occasioned by their being kept up, and fed solely upon vegetables. The sea affords them a great variety of fishes ; of which the smaller ones are generally eaten raw, as we eat oysters. Their principal vegetable aliment is the bread-fruit, to obtain which it costs them no other trouble than that of climbing a tree. The tree which produces this fruit does not, it is true, shoot up spontaneously : ‘ But,’ Captain COOK remarks, ‘ if a man plants ten of them in his

I i 2

‘ lifetime,

* Hawkesworth’s Narrative of Cook’s Voyage, vol. 2. p. 195.

† Ibid. p. 196.

‡ Ibid.

‘ lifetime, which he may do in about an hour, he will as completely fulfil his duty to his own and future generations, as the native of our less temperate climate can do by ploughing in the cold of winter, and reaping in the summer’s heat, as often as these seasons return.—It is true, indeed, that the bread-fruit is not always in season ; but cocoa-nuts, bananas, plantains, and a great variety of other fruits, supply the deficiency *.’ Their art of cookery is very simple and limited. It consists entirely of broiling and baking. Their drink, in general, is water, or the juice of the cocoa-nut, the art of producing intoxicating liquors by fermentation or distillation being happily unknown to them. Neither do they chew any narcotic substances, such as opium, beetle-root, and tobacco. ‘ Some of them,’ says Captain COOK, ‘ drank freely of our liquors, and, in a few instances, became very drunk ; but the persons to whom this happened were so far from desiring to repeat the debauch, that they would never touch any of our liquors afterwards. We were, however, informed, that they became drunk by drinking a juice that is expressed from the leaves of a plant which they call *Ava Ava*. This vice is almost peculiar to the chiefs and considerable persons, who vie with each other in drinking the greatest number of draughts, each draught being about a pint †. They keep this intoxicating juice with great care from their women ‡.’

The quantity of food which these people eat at a meal is prodigious.

* Hawkesworth’s Narrative of Cook’s Voyage, vol. 2. p. 197.

† A similar practice was long prevalent in Scotland. When a lady’s health was drunk to, if any gentleman in company said *more*, the antagonists proceeded to double the quantity each time the word was repeated, till it terminated in one of them falling from his chair. This absurd and hurtful amusement has, for some years, happily ceased.

‡ Hawkesworth’s Narrative of Cook’s Voyage, vol. 2. p. 200.

gious. ‘ I have seen one man,’ says Captain COOK, ‘ devour two
 ‘ or three fishes as big as a perch ; three bread-fruits, each bigger
 ‘ than two fists ; fourteen or fifteen plantains or bananas, each of
 ‘ them six or seven inches long, and four or five round ; and near a
 ‘ quart of the pounded bread-fruit, which is as substantial as the
 ‘ thickest unbaked custard *.

It is a singular custom among the Otaheiteans, that, though fond
 of society, and particularly that of their women, they always eat
 alone. ‘ How a meal,’ Captain COOK remarks, ‘ which every where
 ‘ else brings families and friends together, came to separate them
 ‘ here, we often inquired, but could never learn. They eat alone,
 ‘ they said, because it was right ; but why it was right to eat alone,
 ‘ they never attempted to tell us. Such, however, was the force of
 ‘ habit, that they expressed the strongest dislike, and even disgust, at
 ‘ our eating in society, especially with our women, and of the same
 ‘ victuals. Even two brothers and two sisters have each their sepa-
 ‘ rate baskets with provision and the apparatus of their meal. When
 ‘ they first visited us at our tents, each brought his basket with him ;
 ‘ and, when we sat down to table, they would go out, sit down up-
 ‘ on the ground, at two or three yards distance from each other, and,
 ‘ turning their faces different ways, take their repast without inter-
 ‘ changing a single word †.

Flutes and drums are their only musical instruments. The flutes
 are made of hollow bamboos, and the drums of hollowed blocks of
 wood, of a cylindrical form, solid at one end, and, at the other,
 covered with a shark’s skin. These drums they beat with their
 ‘ hands,

* Hawkesworth’s Narrative of Cook’s Voyage, vol. 2. p. 202.

† Ibid. p. 203.

hands, and not with sticks; and they know how to tune two drums of different notes into concord.

With regard to sexes, the natives of Otaheite seem not to have even the sense of modesty. Among other amusements, they have a dance, called *Timorodee*, which is performed by young girls. It consists of motions and gestures extremely wanton and dissolute. These people have ascended a scale of sensuality unknown to every other nation whose manners have been recorded. ‘A very considerable number of the people of Otaheite, of both sexes,’ Captain COOK tells us, ‘have formed themselves into societies, in which every woman is common to every man. These societies are distinguished by the name of *Arreoy*; and the members have meetings, at which no other is present, where the men amuse themselves by wrestling, and the women, notwithstanding their occasional connection with different men, dance the *Timorodee* in all its latitude, as an incitement to desires which, it is said, are frequently gratified upon the spot. This, however, is comparatively nothing. If any of the women happen to be with child, which, in this manner of life, happens less frequently than if they were to cohabit only with one man, the poor infant is smothered the moment it is born, that it may be no incumbrance to the father, nor interrupt the mother in the pleasures of her diabolical prostitution. A practice so horrid,’ continues our author, ‘should not be imputed to human beings upon slight evidence; but I have such as abundantly justifies me in the account I have given. The people themselves are so far from concealing their connection with such a society as a disgrace, that they boast of it as a privilege; and both myself and Mr BANKS, when particular persons have been pointed out to us as members of the *Arreoy*, have questioned them about it,

‘and

‘ and received the account that has been here given from their own
‘ lips. They have acknowledged, that they have long been mem-
‘ bers of this accursed Society, that they belonged to it at that time,
‘ and that several of their children had been put to death *.

The natives of Otaheite are extremely attentive to personal cleanliness. Both sexes uniformly bathe themselves three times every day ; as soon as they rise in the morning, at noon, and before they go to sleep at night. This operation they perform either in the sea, or in some adjacent river.

Their chief *manufacture* is cloth, which consists of three kinds, and is composed of the bark of three different trees, the Chinese paper mulberry, the bread-fruit tree, and a tree which resembles the wild fig-tree of the West Indies. The cloth procured from the paper mulberry is the finest and whitest. This kind is chiefly worn by people of some distinction, and, when dyed red, takes a better colour. A second kind, which is inferior both in whiteness and softness, they make of the bread-fruit tree : It is worn chiefly by the lower class of people. A third sort they derive from a tree that resembles the fig. This cloth, though not so pleasing to the eye or the touch, is the most valuable, because it resists the operation of water, which the other two species cannot. These three useful trees, as might be expected, are propagated with care and diligence. The liber, or inner rind of the bark, is alone employed ; and the operation of making the various kinds of cloth is performed by mashing the substances in water, and beating them into form with bone-mallets. This species of manufacture, though different, is somewhat similar to

our

* Hawkesworth's Narrative of Cook's Voyage, vol. 2. p. 207, &c.

our making of paper *. These cloths they dye with several colours, but chiefly red and yellow. Their dyes, or rather pigments, consist of the expressed juices of various vegetables.

These people likewise manufacture matting of many different kinds; some of which are finer and better than any we have in Europe. The coarser matting they sleep upon, and the finer they wear as garments in wet weather. In making baskets and wicker-work, they are also very ingenious and dexterous. ‘ Their baskets,’ says Captain COOK, ‘ are of a thousand different patterns, many of them ‘ exceedingly neat; and the making them is an art that every one ‘ practises, both men and women †.’ Of the bark of the *Poerou*, or *Hibiscus tileaceus* of LINNÆUS, they make ropes and fishing lines, from the thickness of an inch to that of a packthread; with these they make nets for fishing. With thread made of the fibres of cocoa-nut, they fasten together the several parts of their canoes. ‘ Of the bark ‘ of the *Erowa*,’ Captain COOK informs us, ‘ a kind of nettle which ‘ grows in the mountains, and is therefore rather scarce, they make ‘ the best fishing lines in the world: With these they hold the ‘ strongest and most active fish, such as Bonetas and Albicores, which ‘ would snap our strongest silk lines in a minute, though they are ‘ twice as thick. They make also a kind of seine, of a coarse broad ‘ grass, the blades of which are like flags. These they twist and tie ‘ together in a loose manner, till the net, which is about as wide as ‘ a large sack, is from sixty to eighty fathoms long. This they haul ‘ in smooth shoal-water, and its own weight keeps it so close to the ‘ ground that scarcely a single fish can escape ‡.’

Every

* In the Museum of the Antiquarian Society of Edinburgh, many specimens of these cloths may be seen.

† Hawkesworth's Narrative of Cook's Voyage, vol. 2. p. 217.

‡ Ibid. p. 218.

Every fisherman here is his own artificer, and makes hooks, lines, and even harpoons, with great neatness and ingenuity *. The chief materials of which they are composed, are wood, bones, and shells.

One great article in their manufacture is the building and carving their boats ; and Captain COOK remarks, that to fabricate one of their principal vessels, with their tools, is perhaps as great a work as to build a British man of war with ours. They employ an adze of basaltic stone, a chissel, or gouge, of bone, a rasp of coral, and the skin of the sting-ray, with coral sand, as a file or polisher. ‘ This,’ says Captain COOK, ‘ is a complete catalogue of their tools ; and with ‘ these they build houses, construct canoes, hew stone, and fell, ‘ cleave, carve, and polish timber †.’ The length of their canoes vary from ten to seventy-two feet, according to the purposes they are intended to answer, and are distinguished by different names. Their breadth is by no means proportioned to their length ; for those of ten feet are about a foot wide only, and those which exceed seventy in length, are not more than two feet broad. Those long vessels never go to sea single, but two of them are fastened together, side by side, at the distance of near three feet, by strong rafters of wood, which are laid across the canoes and lashed to their gunwales. ‘ Upon these,’ says Captain COOK, ‘ in the fore-part, a stage or platform is raised, about ten or twelve feet long, and somewhat wider ‘ than the boats, which is supported by pillars about six feet high : ‘ Upon this stage stand the fighting men, whose missile weapons are ‘ slings and spears ; for, among other singularities in the manners of ‘ these people, their bows and arrows are used only for diversion,

VOL. II.

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* Of these, various specimens may be seen in the Museum of the Antiquarian Society of Edinburgh.

† Hawkesworth's Narrative, &c. vol. 2. p. 220.

‘ as we throw quoits. Below these stages sit the rowers, who receive from them those that are wounded, and furnish fresh men to ascend in their room *.’ The oars or paddles employed to manage these boats have a long handle and a flat blade, not unlike a baker’s peal. Some of them have one mast, and some two; and, when the length of the canoe is thirty feet, that of the mast is about five and twenty. The sails consist of strong matting. With these boats the natives, in going from one island to another, are sometimes out a month together. Sometimes, Captain COOK informs us, they are fourteen or twenty days at sea, and could keep it longer, if they had more stowage for water and other provisions. They have a wonderful sagacity in foretelling the weather, especially the quarter from which the wind shall blow at a future period.

‘ In their longer voyages,’ says Captain COOK, ‘ they steer by the sun in the day, and, in the night, by the stars; all of which they distinguish separately by names, and know in what part of the heavens they will appear in any of the months during which they are visible in their horizon. They also know the time of their annual appearing and disappearing with more precision than will easily be believed by any European astronomer †.’

With regard to the division of time in Otaheite, Captain COOK and the other gentlemen were not able to acquire a perfect idea. They, however, remarked, that, when speaking of time, either past or future, these people uniformly employed the word *Malama*, which signifies *Moon*. ‘ Of these moons,’ says Captain COOK, ‘ they count thirteen, and then begin again; which is a demonstration that they have a notion of the solar year ‡.’ Every day, or twenty-

* Hawkesworth’s Narrative, &c. vol. 2. p. 221.

† Ibid. p. 226.

‡ Ibid. p. 227.

twenty-four hours, they divide into twelve parts. During the day, they estimate these divisions pretty accurately by the height of the sun; but, when the sun is below the horizon, few of them are capable of reckoning time by means of the stars. In numeration, they proceed from one to ten, which they count on the fingers of both hands. In counting above ten, they repeat the name of that number, and add the word *more*; as ten and one *more* is eleven; ten and two more is twelve, &c.; in the same manner as we say twenty-one, twenty-two. ‘When they come to ten and ten more,’ Captain Cook informs us, ‘they have a new denomination, as we say a score; and by these scores they count till they get ten of them, when they have a denomination for two hundred *; and we never could discover that they had any denomination to express a greater number †.—In measuring distance, they are much more deficient than in computing numbers, having but one term, which answers to *fathom*. When they speak of distances from place to place, they express it, like the Asiatics, by the time that is required to pass it ‡.’

The language of the Otaheiteans, we are informed, is soft and melodious. It abounds with vowels, and is easily pronounced. ‘Whether it is copious,’ Captain Cook remarks, ‘we were not sufficiently acquainted with it to know; but it is certainly very imperfect; for it is almost totally without inflection, both of nouns and verbs. Few of the nouns have more than one case, and few of the verbs more than one tense; yet we found no great difficulty in making ourselves mutually understood ||.’ In their language, however, they have a few adjuncts which are very useful to them,

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* Hawkesworth’s Narrative, &c. vol. 2. p. 228.

† Ibid.

‡ Ibid.

|| Ibid.

but extremely puzzling to strangers. ‘ One asks another,’ says Captain Cook, ‘ *Harre hea* ? “ Where are you going ? ” The other answers, *Ivabinera*, “ To my wives ; ” upon which the first repeating the answer interrogatively, “ To your wives ? ” is answered, *Ivabinereira* ; “ Yes, I am going to my wives.” Here the suffixes *era* and *cira* save several words to both parties *.’

In general, the *languages* in the South Sea, and particularly in Otaheite, seem to consist of sounds which are extremely soft and delicate. The proportion of vowels employed greatly exceeds that of the consonants ; and it is not unworthy of remark, that, with regard to language, even in Europe, the nearer we approach to the equatorial regions, the number of vowels increase, and the languages become not only more perfect, by the inflexions of nouns and verbs, but more harmonious and musical. The Italian is much more soft and ductile, and better accommodated to the purposes of poetry, than those of their neighbours the French or Germans. The Greek, again, in these qualities, exceeds the Italian ; and the Persian, and other Asiatic languages, are still softer and more languishing than the Greek. In the South Sea islands, Captain Cook informs us, ‘ their language is soft and melodious ; it abounds with vowels, and we easily learnt to pronounce it ; but found it exceedingly difficult to teach them to pronounce a single word of ours ; probably not only from its abounding in consonants, but from some peculiarity in its structure ; for Spanish and Italian words, if ending in a vowel, they pronounced with great facility †.’—To give some faint idea of their language, I shall subjoin a few examples of their common words : ‘ *Abewh*, the nose ; *Roourou*, the hair ; *Outou*, the mouth ; *Nihee*, the teeth ; *Mau-eumi*, the beard ; *Tiarraboa*, the throat ;

* Hawkesworth's Narrative, &c. vol. 2. p. 229.

† Ibid. p. 228.

‘ throat ; *Tuamo*, the shoulders ; *Tuab*, the back ; *Oama*, the breast ;
 ‘ *Oboo*, the belly ; *Rema*, the arm ; *Mieu*, the nails ; *Hooubah*, the
 ‘ thighs ; *Avia*, the legs ; *Tapoa*, the feet ; *Booa*, a hog ; *Moa*, a
 ‘ fowl ; *Euree*, a dog ; *Ooroo*, bread-fruit ; *Hearee*, cocoa-nuts ; *Mia*,
 ‘ bananas ; *Vace*, wild plantains ; *Poc*, beads ; *Abou*, a garment *,’
 &c.

Captain COOK and his associates, with much attention and laudable industry, have published a pretty extensive vocabulary, in alphabetical order, of the language spoken in several of the South Sea islands. They have likewise subjoined, in the form of an analogical table, specimens of the languages employed in eight different islands ; and the similarities in the general structure of these languages must surprise every reader, especially when the great distances of many of these islands from each other are considered. I shall give a few examples : *A Bird*, in Otaheite, is *Manoo* ; in Easter Island, *Manoo* ; in the Island Amsterdam, *Manoo* ; in Tanna, *Manoo* ; in New Caledonia, *Manee*, or *Maneck*. In Otaheite, *One* is *A'Tabay* ; in Easter Island, *Katta'baee* ; in the Marquesas Isles, *Atta'baee* ; in Amsterdam Island, *Ta'baee* ; in Malicolo, *Tsee'kaee* ; in Tanna, *Reedee* ; in New Caledonia, *Wagee'aing*. *Two*, in Otaheite, is *E'rooa* ; in Easter Island, *'Rooa* ; in the Marquesas Isles, *A'ooa* ; in Amsterdam Island, *E'ooa* ; in Malicolo, *E'ry* ; in Tanna, *'Karoo* ; in New Caledonia, *'Waroo*. *Three*, in Otaheite, is *'Toroo* ; in Easter Island, *'Toroo* ; in the Marquesas Isles, *A'toroo* ; in Amsterdam Island, *'Toroo* ; in Malicolo, *E'rei* ; in Tanna, *'Kabar* ; in New Caledonia, *Watee'en*.

From the analogical specimens of eight languages used in the South Sea islands, Captain COOK makes the following observations :

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* Hawkesworth's Narrative, &c. vol. 2. p. 229.

‘ It may be easily perceived,’ says he, ‘ that, notwithstanding some words are entirely different, the first five Indian languages are radically the same, though the distance from Easter Island to New Zealand is upwards of fifteen hundred leagues. The principal difference consists in the mode of pronunciation, which, in Easter Island, Amsterdam, and New Zealand, is more harsh, or guttural, than at the Marquesas Isles, or Otaheite. The other three differ totally, not only from the preceding, but from each other; which is more extraordinary than the agreement of the others, as, from Malicolo to Tanna, you never lose sight of land; nor is New Caledonia at a great distance from the last place. In the language of Malicolo, a great number of harsh labial sounds prevail, very difficult to be represented in writing. At Tanna, the pronunciation is likewise harsh, but rather guttural; and the inhabitants of New Caledonia have many nasal sounds, or snivel much in speaking. It may, however, be observed, that, in the three last languages, some words are found, which seem to have a distant resemblance to those that go before; as *Brrooas*, in Malicolo, and *‘Booga*, or *Boogas*, in Tanna, both signifying a *bog*; which, at Otaheite and the Marquesas, is expressed by the word *Büa*, and, at Amsterdam, by *Boo’acka* *.’

With regard to *diseases*, among a people whose food is so simple, and who are seldom intoxicated; their number, as might naturally be expected, is not great. ‘ The natives, however,’ Captain COOK informs us, ‘ are afflicted with the erysipelas, and cutaneous eruptions of the scaly kind, very nearly approaching to a leprosy.— We observed also a few who had ulcers upon different parts of
‘ their

* Cook’s Voyage, vol. 2. p. 364. The accents at the beginning or in the middle of words denote the chief emphasis on these syllables.

‘ their bodies, some of which had a very virulent appearance ; yet
 ‘ they seemed not much to be regarded by those who were afflicted
 ‘ with them ; for they were left entirely without application even to
 ‘ keep off the flies *.’ In these happy regions, where diseases are
 neither numerous nor complicated, they have no professional physicians. In Otaheite, the management of the sick is entirely committed to the priests ; and their method of cure consists chiefly of ceremonies and prayers. ‘ When a priest,’ says Captain COOK, ‘ visits
 ‘ his patient, he repeats certain sentences, which appear to be set
 ‘ forms contrived for the occasion ; and, at the same time, plaits
 ‘ the leaves of the cocoa-nut into different figures very neatly ; some
 ‘ of these he fastens to the fingers and toes of the sick.—These
 ‘ ceremonies are repeated till the patient recovers or dies. If he
 ‘ recovers, they say the *remedies cured him* ; if he dies, they say the
 ‘ disease was *incurable* ; in which, perhaps, they do not much differ
 ‘ from the *custom* of other countries †.—If we had judged of their
 ‘ skill in surgery from the dreadful scars which we sometimes saw,
 ‘ we should have supposed it to be much superior to the art not only
 ‘ of their physicians, but of ours. We saw one man whose face
 ‘ was almost entirely destroyed ; his nose, including the bone, was
 ‘ perfectly flat ; and one cheek and one eye were so beaten in, that
 ‘ the hollow would almost receive a man’s fist, yet no ulcer remained ‡.’

It is painful to learn, that the intercourse of these once happy and healthy people with what we call *refined* Europeans, should have entailed upon them, perhaps for ever, that dreadful scourge the *venercal* disease ! ‘ As it is certain,’ Captain COOK remarks ||, ‘ that,

* Hawkesworth’s Narrative, &c. vol. 2. p. 231.

† Ibid. p. 233.

‡ Ibid.

|| Ibid.

‘ that no European vessel besides our own, except the Dolphin,
 ‘ and the two that were under the command of Mons. BOUGAIN-
 ‘ VILLE, ever visited this island, it must have been brought either
 ‘ by one of them, or by us. That it was not brought by the Dol-
 ‘ phin, Captain WALLIS has demonstrated in the account of her
 ‘ voyage * ; and nothing is more certain than that, when we arriv-
 ‘ ed, it had made most dreadful ravages in the island. One of our
 ‘ people contracted it within five days after we went on shore ; and,
 ‘ by the inquiries among the natives, which this occasioned, we
 ‘ learnt, when we came to understand a little of their language, that
 ‘ it had been brought by the vessels which had been there about
 ‘ fifteen months before us. They distinguished it by a name of the
 ‘ same import with *rottenness*, but of a more extensive signification ;
 ‘ and described, in the most pathetic terms, the sufferings of the first
 ‘ victims to its rage ; and told us, that it caused the hair and the
 ‘ nails to fall off, and the flesh to rot from the bones ; that it spread
 ‘ a universal terror and consternation among them, so that the sick
 ‘ were abandoned by their nearest relations, lest the calamity should
 ‘ spread by contagion, and left to perish alone in such misery, as till
 ‘ then had never been known among them.’ A most diabolical
 compliment, from whatever nation it was imported, to a beautiful,
 an unsuspicious, and, in a great measure, primitively innocent
 people. Such are the happy fruits of commerce ! The *Arabians*
 gave us the *small-pox*, and the *Americans* the *great*. Thus the ex-
 tension of knowledge, by travelling and navigation, though highly
 acceptable to every human mind, is often productive of the most
 calamitous and deleterious effects. What are the devastations of
 war, and even of the pestilence, when compared to the havoc daily
 occasioned by these two accursed diseases ?

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* Vol. I. p. 489. 490.

It is no small consolation, however, to be informed by Captain COOK, that there was some reason to hope, that the natives had discovered a specific cure for the venereal disease; for, he remarks, during their stay upon the island, they saw none in whom it had made great progress. But the few following lines exhibit a most dreadful picture of the condition of these now unhappy people. ‘We endeavoured to learn,’ says Captain COOK, ‘the medical qualities which they imputed to their plants; but our knowledge of their language was too imperfect for us to succeed. If we could have learnt their specific for the venereal disease, if such they have, it would have been of great advantage to us; for, when we left the island, it had been contracted by *more than half* the people on board the ship *.’

With regard to the *religion* of these people, Captain COOK remarks, it was difficult to acquire any clear and consistent ideas. Like the religion of most other countries, it seemed to be involved in mystery, and perplexed with inconsistencies. The idea of multiplication includes the intercourse of two persons; and, from the conjunction of two persons, these people imagine every being in the universe to have originally proceeded. ‘The supreme Deity,’ Captain COOK remarks, ‘one of those two first beings, they call *Taroatai-betoomoo*; and the other, whom they suppose to have been a rock, *Tepapa*. A daughter of these was *Tettowmatatayo*, the year, or thirteen months collectively, which they never name but upon this occasion; and she, by the common father, produced the months; and the months, by conjunction with each other, the days. The stars they suppose partly to be the immediate offspring of the first pair, and partly to have increased among themselves; and they

VOL. II. L I ‘ have

* Hawkesworth’s Narrative, &c. vol. 2. p. 233.

‘ have the same notion with respect to the different species of plants.
 ‘ Among other progeny of *Taroataibetoomoo* and *Tepapa*, they suppose an inferior race of deities, whom they call *Eatuas*.’

They tell us, that two of these *Eatuas*, at a remote period, inhabited the earth, and produced the first man, who, being stimulated to propagate his kind, and having no female but his own mother, with her he begot daughters, and by these daughters he had other daughters for several generations, before he had a son. A son, however, at last made his appearance, and he, by means of his sisters, peopled the earth *. This son they called *Tane*. *Taroataibetoomoo*, or the supreme Deity, is emphatically stiled the great causer of earthquakes: But the prayers of these people are commonly addressed to *Tane*, who is supposed to take a greater interest in the affairs of men. Their *Eatuas*, or subordinate deities, are numerous, and supposed to be of both sexes. The males are worshipped by the men, and the females by the women.

These people believe the immortality of the soul, or, at least, its existence in a state separate from the body, and that, after death, there are two situations similar to our heaven and hell. ‘ The superior situation they call *Tavirua l’eraï*, and the other *Tiaboboo*. They do not, however, consider them as places of reward and punishment, but as receptacles for different classes; the first, for their chiefs and principal people, the other, for those of inferior rank; for they do not suppose, that their actions here in the least influence their future state, or indeed that they come under the cognizance of their deities at all †.’

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* These ideas must recall to every person’s remembrance the story of *Lot* and his daughters.

† Hawkefworth’s *Narrative of Cook’s Voyage*, vol. 2. p. 239.

The office of priest, or *Tabowa*, is hereditary. The class is numerous, and consists of all ranks. Their chief priest, however, is commonly the younger brother of some respectable family, and revered next to their kings. As in all ignorant countries, the priests of Otaheite actually possess, or pretend to possess, superior knowledge ; but it consists chiefly in their acquaintance with the ranks and names of the various Eatuas, or subordinate divinities, and their opinions concerning the origin of the world and of its productions, which have been preserved traditionally among their order : But, what is of greater consequence, the priests excel the rest of the people in the knowledge of astronomy and navigation ; and, in their language, the name *Tabowa* denotes nothing more than a man of knowledge. There are priests of every class ; but they officiate only among the respective classes to which each belongs.

In this island, *marriage* seems to be nothing more than a simple agreement between the man and the woman, without the intervention of any priest. Though the priests, however, receive no money for nuptial benedictions, they have appropriated two operations, the one *tattooing*, and the other *circumcision*, from which they derive considerable advantages, though they appear not to have any connection with religion. ‘ Circumcision,’ Captain COOK remarks, ‘ has been adopted merely from motives of cleanliness. It cannot, indeed, properly be called *circumcision*, because the prepuce is not mutilated by a circular wound, but only slit through the upper part, to prevent its contracting over the *glans*. As neither of these can be performed but by a priest, and as to be without either is the greatest disgrace, they may be considered as a claim to surplice fees, like our marriages and christenings *.’ It does not appear, however, that

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these

* Hawkesworth’s Narrative of Cook’s Voyage, vol. 2. p. 241.

these people are idolaters; for they neither worship any thing made
 ' their own hands, nor any visible part of the creation. But the In-
 ' n approaches his Morai, or place of worship, ' with a reverence
 ' l humility,' Captain COOK remarks, ' that disgraces the Chris-
 ' tian, not because he holds any thing sacred that is there, but be-
 ' cause he there worships an invisible divinity, for whom, though he
 ' neither hopes for reward nor fears punishment, at his hand, he al-
 ' ways expresses the profoundest homage and most humble adora-
 ' tion *.'

With regard to *government*, Captain COOK informs us, that though he could not assert that they had any regular form similar to our establishment; ' yet,' says he, ' a subordination is established
 ' among them, that greatly resembles the early state of every nation
 ' in Europe under the feudal system, which secured liberty in the
 ' most licentious excess to a few, and entailed the most abject sla-
 ' very upon the rest †.' Their chief orders, or classes, are *Earee rabie*, or King; *Earee*, Baron; *Manahouni*, vassal; and *Toutou*, villain. In the island, there are two *Earee rabies*; one is sovereign of one of the peninsulas, and the other of the second, of which their whole territory consists. These Kings are treated with the highest respect. The Earees are Lords or Chiefs of one or more of the districts into which the peninsulas are divided; and there seemed to be about one hundred of them in the whole island. They parcel out their territories to the Manahounies, who cultivate the portions which they hold under the Barons. The *Toutous*, or lowest class, perform all the servile offices, as the villains did in feudal governments: ' These,' says Captain COOK, ' do all the laborious
 ' work; they cultivate the land under the Manahounies, who are
 ' only

* Hawkesworth's Narrative of Cook's Voyage, vol. 2. p. 241. † Ibid. p. 242.

‘ only nominal cultivators for the lord ; they fetch wood and water,
 ‘ and, under the direction of the mistress of the family, dress the vic-
 ‘ tuals ; they also catch the fish *.’

The Earees keep a kind of courts, and have a number of attend-
 ants. The court of ΤΟΟΤΑΗΑΗ was the most splendid, because he ad-
 ministered the government for his nephew, ΟΥΤΟΥ, who was Earee
 rahie of Obereonoo. Captain COOK remarks a singular law, or cus-
 tom, among these people. ‘ The child of the Baron, or Earee,’ he
 tells us, ‘ as well as of the sovereign, or Earee rahie, succeeds to the
 ‘ title and honours of the father as soon as it is born : So that a ba-
 ‘ ron, who was yesterday called *Earee*, and was approached with the
 ‘ ceremony of lowering the garments, so as to uncover the upper part
 ‘ of the body, is to-day, if his wife was last night delivered of a
 ‘ child, reduced to the rank of a private man, all marks of respect
 ‘ being transferred to the child, if it is suffered to live, though the fa-
 ‘ ther still continues possessor and administrator of his estate †.’

With regard to *war*, if a general attack is apprehended to be made
 upon the island, every district is obliged to furnish its proportion of
 fighting men. Upon such critical occasions, the united forces of the
 island are commanded by the Earee rahie. Their principal weapons
 are slings, in the use of which they are very dexterous, pikes headed
 with the stings of the sting-ray fish, and clubs six or seven feet in
 length, made of a very hard and compact wood. ‘ Thus armed,’
 Captain COOK remarks, ‘ they are said to fight with great obstinacy,
 ‘ which is the more likely to be true, as it is certain, that they give no
 ‘ quarter to either man, woman, or child, who is so unfortunate as
 ‘ to fall into their hands during the battle, or for some hours after-
 ‘ wards,

* Hawkesworth's Narrative of Cook's Voyage, vol. 2. p. 243.

† Ibid. p. 244.

‘wards, till their passion, which is always violent, has subsided.
 ‘The Earee rahie of Obereonoo, while we were here, was in perfect amity with the Earee rahie of Tiârreboo, the other peninsula*.’

Captain COOK farther remarks, that, in a government so rude, it is not to be expected that distributive justice should be regularly administered; that, where there is so little opposition of interests, owing to the facility with which all the passions and appetites of these people are gratified, few crimes can exist; that they have nothing resembling money; that there is no permanent good which either fraud or force can obtain; that, when all the crimes committed in civilized nations, in order to procure money, are removed, few will remain; that, by TUPIA’s information, we learnt, that both theft and adultery are sometimes committed; that in all cases where injuries have been sustained, the sufferer, if he is able, punishes the offender; that adultery is sometimes, in the first ardour of resentment, punished with death; but that, without circumstances of immediate provocation, the female generally suffers no more than a beating. ‘As punishment, however,’ says Captain COOK, ‘is enforced by no law, nor taken into the hand of any magistrate, it is not often inflicted, except the injured party is the strongest; though the chiefs do sometimes punish their immediate dependents, for faults committed against each other, and even the dependents of others, if they are accused of any offence committed in their district †.’

From Otaheite, Captain COOK proceeded to another island, called *Huabeine*, which lies in the latitude of 16°. 43’ S. and longitude 150° 52’ W. from Greenwich. It is about seven leagues in circuit. The natives

* Hawkesworth’s Narrative of Cook’s Voyage, vol. 2. p. 244.

† Ibid. p. 245.

natives of this island are, in general, larger and stronger than those of Otaheite. Mr BANKS measured one of the men, and found him to be six feet three inches and an half high. These people, however, notwithstanding their strength and stature, like most savages, are extremely lazy. Mr BANKS could not persuade any of them to go up the hills with him ; because, they said, the fatigue would kill them. The women here are fairer and more handsome than those of Otaheite. Mr BANKS's attention was much excited by a singular object : ' It was,' he remarks, ' a kind of chest or ark, the lid of which ' was nicely sewed on, and thatched very neatly with palm-nut ' leaves. It was fixed upon two poles, and supported by little arches ' of wood, very neatly carved. The use of the poles seemed to be ' to remove it from place to place, in the manner of our sedan ' chairs.—The first time Mr BANKS saw this coffer, the aperture at ' the end was stopped with a piece of cloth, which, lest he should ' give offence, he left untouched. The general resemblance between ' this repository and the *Ark of the Lord* among the Jews is remarkable ; but it is still more remarkable, that, upon inquiring of ' TUPIA's boy TAYETO what it was called, he said *Ewbarre no* ' *Eatua*, the *house of the God*. He could, however, give no account ' of its signification or use *.'

After staying some time on this island, Captain COOK made sail for a neighbouring island called *Ulislea*, which lies about seven or or eight leagues nearly south-west from Huaheine. As soon as the ship came to an anchor, the natives came off in two canoes, each of which brought a woman and a pig. The women were supposed to be marks of confidence and friendship, and the pigs were intended as presents. Both were received with proper acknowledgments ; and

* Hawkesworth's Narrative of Cook's Voyage, vol. 2. p. 252.

and the ladies were complimented with a spike-nail and some beads. After the gentlemen landed, they examined a great Morai, called *Tapodeboatea*, and found it to differ much from those of *Otabeite*; it consisted of four walls about eight feet high, and composed of coral stones, some of which were of a great size. This fabric inclosed an area of about twenty-five yards square, and was filled up with smaller stones: ‘ Upon the top of it,’ says Captain Cook, ‘ many planks were set up on an end, which were carved in their whole length. At a little distance, we found an altar, or *Ewhatta*, upon which lay the last oblation or sacrifice, a hog of about eighty pounds weight, which had been offered whole, and very nicely roasted. Here were also four or five *Ewharre no Eatua*, or houses of God *, to which carriage poles were fitted, like that which we had seen at Huaheine. From hence we went to a long house, where, among rolls of cloth, and several other things, we saw the model of a canoe, about three feet long, to which were tied eight human jaw-bones. We had already learnt that these, like scalps among the Indians of North America, were trophies of war.’

Captain Cook, in his progress southward, cast anchor in another harbour of the same island. When the gentlemen landed, they were followed every where by men, women, and children, who showed them every kind of civility. They were conducted to the houses of the principal people, who received them in a very uncommon manner. ‘ The people who followed them while they were in their way,’ Captain Cook informs us, ‘ rushed forward as soon as they came to a house, and went hastily in before them, leaving however a lane sufficiently wide for them to pass. When they entered, they found those who had preceded them ranged on each side of a long
mat

* These arks, or houses of God, are very frequent in the South Sea islands.

‘ mat, which was spread upon the ground, and at the farther end of
 ‘ which sat the family. In the first house they entered they found
 ‘ some very young women or children, dressed with the utmost
 ‘ neatness.—One of them was a girl about six years old ; her gown,
 ‘ or upper garment, was red ; a large quantity of plaited hair was
 ‘ wound round her head, the ornament to which they give the name
 ‘ of *Tamou*, and which they value more than any thing they possess.
 ‘ She sat at the upper end of a mat thirty feet long.—Our gentle-
 ‘ men walked up to her ; and, as soon as they approached, she
 ‘ stretched out her hand to receive the beads which they offered
 ‘ her, and no Princess in Europe could have done it with a better
 ‘ grace *.’

In the course of their walk, Captain COOK tells us, they met with a company of dancers, who afforded them great entertainment. The company consisted of two women, six men, and three drummers. Though they are continually going about, like the companies of Otaheite, they receive no gratuities from the spectators. The women wore upon their heads a considerable quantity of plaited hair, which was twisted several times round, and adorned with the flowers of the Cape jessamine, which were arranged with great taste, and formed a head-dress truly elegant. ‘ Their necks, shoulders, and arms,’ says Captain COOK, ‘ were naked ; so were the
 ‘ breasts also as low as the parting of the arm ; below that they
 ‘ were covered with black cloth, which set close to the body ; at the
 ‘ side of each breast, next the arm, was placed a small plume of
 ‘ black feathers, much in the same manner as our ladies now wear
 ‘ their nosegays or *bouquets* ; upon their hips rested a quantity of
 ‘ cloth, plaited very full, which reached up to the breast, and fell
 VOL. II. M m ‘ down

* Hawkesworth's Narrative of Cook's Voyage, vol. 2. p. 263.

‘ down below into long petticoats, which quite concealed their feet, and which they managed with as much dexterity as our opera-dancers could have done. The plaits above the waist were brown and white alternately; the petticoats below were all white. In this dress they advanced sideways in a measured step, keeping excellent time to the drums, which beat briskly and loud.’ They threw their bodies into postures, ‘ sometimes standing, sometimes sitting, and sometimes resting on their knees and elbows, the fingers also being moved at the same time with a quickness scarcely to be imagined. Much of the dexterity of the dancers, however, and the entertainment of the spectators, consisted in the wantonness of their attitudes and gestures, which was, indeed, such as exceeds all description *.’ The men, between the dances of the women, performed a kind of dramatic interlude, which consisted of dialogue as well as dancing. On the following day, some of the gentlemen saw a more regular entertainment of the dramatic kind, which was divided into four acts †.

On the 5th day of August 1769, Captain COOK received from OPOONY, the formidable King of Bolabola, a present of three hogs, some fowls, several large pieces of cloth fifty yards in length, and a considerable quantity of plantains, cocoa-nuts, and other comfortable refreshments. The King likewise sent a message, that he was upon the island, and intended to wait upon Captain COOK the next day, at his ship. During the forenoon of the next day, the expected visit of the great King was not performed. ‘ In the afternoon,’ Captain COOK tells us, ‘ as the great King would not come to us, we were determined to go to the great King. As he was lord of the Bolabola men, the conquerors of this, and the terror of all the
‘ other

* Hawkesworth’s Narrative of Cook’s Voyage, vol. 2. p. 264.

† Ibid. p. 266.

‘ other islands, we expected to see a chief young and vigorous, with
 ‘ an intelligent countenance, and an enterprising spirit. We found,
 ‘ however, a poor feeble wretch, withered and decrepit, and half
 ‘ blind with age.—He did not receive us sitting, or with any state
 ‘ or formality, as the other chiefs had done. We made him our
 ‘ present, which he accepted, and gave a hog in return. We learnt
 ‘ that his principal residence was at Otaha; and, upon our telling
 ‘ him that we intended to go thither in our boats the next morning,
 ‘ and that we should be glad to have him along with us, he pro-
 ‘ mised to be of the party*.’ In their way, they waited upon
 OPOONY the King, who was in his canoe, and ready to join them.
 When they landed at Otaha, they made him a present of an ax,
 with a view to induce him to encourage his subjects to bring provi-
 sions. But the attempt was abortive; for they could not procure a
 single article.

After leaving Otaha, in a few days, they met with another island,
 called *Obeteroa*. The boat was sent to reconnoitre the shore. A
 number of the natives made their appearance; but they were all
 armed with lances and clubs, which, as a mark of defiance, they
 brandished continually. A few of them made several attempts to
 board the boat and seize her; but all their attempts were abortive.
 When the boat got round a certain point of land in quest of anchor-
 age, it was perceived that all her hostile followers had desisted from
 the pursuit. After turning this point, the boat got into a large bay,
 at the bottom of which another body of men appeared, who were
 likewise armed with long lances. The boat pushed toward the shore,
 in order to land; a canoe, at the same time, put off to meet them.
 They called out to the people in the canoe, that they were friends,

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and

* Hawkesworth's Narrative of Cook's Voyage, vol. 2. p. 268.

and would give them nails, which were exhibited to them. ‘ After
 ‘ some hesitation,’ Captain COOK tells us, ‘ they came up to the
 ‘ boat’s stern, and took some nails that were offered them with great
 ‘ seeming satisfaction ; but, in less than a minute, they appeared to
 ‘ have formed a design of boarding the boat, and making her their
 ‘ prize. Three of them suddenly leaped into it, and the others
 ‘ brought up the canoe, which the motion in quitting her had
 ‘ thrown off a little, manifestly with a design to follow their asso-
 ‘ ciates, and support them in their attempt. The first that boarded
 ‘ the boat, entered close to Mr BANKS, and instantly snatched his
 ‘ powder-horn out of his pocket. Mr BANKS seized it, and with
 ‘ some difficulty wrenched it out of his hand *.’ The officer then
 ordered two guns to be discharged over their heads, upon which the
 whole of them instantly leaped into the water. After several fruit-
 less attempts to trade and get provisions from these people, and after,
 by means of the ship and boats, having circumnavigated the island,
 the want of harbours and of anchorage, and the hostile dispositions
 of the people, determined Captain COOK to leave it. This island is
 situated in the latitude of 22°. 27’ S. and in the longitude of 150°
 47’ W. from the meridian of Greenwich. The natives seemed to
 be lusty and well-made. Their arms were lances of about twenty
 feet in length, made of the Etoa wood, which is very hard, and
 sharpened at the point. They had likewise a weapon, made of the
 same wood, which answered the double purposes of club and lance.
 This instrument of destruction was about seven feet long. As a
 guard against these weapons, the natives, when they attack each
 other, defend themselves by many folds of mats wrapped round
 their bodies.

From

* Hawkesworth’s Narrative of Cook’s Voyage, vol. 2. p. 274.

From the island of Oheteroa, Captain COOK sailed to New Zealand, where, in a bay called *Tolaga*, they found excellent wood and water ; and the dispositions of the natives were friendly and obliging. In their bonatizing walks, Mr BANKS and Dr SOLANDER met with many houses in the vallies which seemed to be entirely deserted. The people live on the ridges of hills in a kind of slight sheds. ‘ As they were advancing,’ Captain COOK remarks, ‘ in one of these vallies, the hills on each side of which were very steep, they were suddenly struck with the sight of a very extraordinary natural curiosity. It was a rock, perforated through its whole substance, so as to form a rude but stupendous arch or cavern, opening directly to the sea. This aperture was seventy-five feet long, twenty-seven broad, and five and forty high, commanding a view of the bay and the hills on the other side, which were seen through it, and, opening at once upon the view, produced an effect far superior to any of the contrivances of art *.’

With regard to *stature*, the men of New Zealand are equal to the largest of those in Europe. They are strong and well limbed, but not fat, like the luxurious natives of the South Sea Islands. They are extremely active, vigorous, and expert in all their operations and exertions. Their colour, in general, is not more brown than that of a Spaniard, who has been exposed to the sun. The appearance of their women is not remarkable for female delicacy, but their voices are soft and agreeable ; and by this circumstance, as the dresses of both sexes are the same, the females are chiefly distinguished. Their hair, in general, is black. Their teeth are very regular, and as white as ivory. In both sexes, the features are agreeable. They seem to enjoy high health ; and some of them had the appearance of great age.

* Hawkesworth's Narrative of Cook's Voyage, vol. 2. p. 317.

age. Their dispositions are mild and gentle, and they discover the most tender affection for each other. They are, notwithstanding, implacable to their enemies, to whom they never give quarter, but always *eat* them. For this horrid practice, Captain COOK, though with reluctance, insinuates, as some kind of an apology, that the natives, when their crops of fern-root, yams, and potatoes fail, and when fish, in particular seasons, cannot be had in sufficient quantity, they often suffer the most dreadful pangs of hunger, and are not unfrequently in danger of perishing by famine.

‘ The situation and circumstances, however, of these poor people,’ Captain COOK remarks, ‘ as well as their temper, are favourable to those who shall settle as a colony among them. Their situation sets them in need of protection, and their temper renders it easy to attach them by kindness ; and, whatever may be said in favour of a savage life, among people who live in luxurious idleness upon the bounty of Nature, civilization would certainly be a blessing to those whom her parsimony scarcely furnishes with the bread of life, and who are perpetually *destroying* each other by violence, as the only alternative of perishing by hunger *.

When Captain COOK first landed upon their coast, these people, who are habitually inured to war, and consider every stranger as an enemy, were always disposed to make hostile attacks, and to steal, till they were taught the destructive effects of fire-arms. But, after being convinced, that superiority of power by no means consisted in numbers alone, they became both friendly and hospitable, and exhibited the most unbounded confidence in their unknown visitors. Both sexes mark their faces and bodies with black stains, called *Amoco*,
similar

* Hawkesworth's Narrative of Cook's Voyage, vol. 3. p. 449.

similar to the tattowing in Otaheite. The men, particularly, add new stains every year ; so that, in an advanced period of life, they are almost covered from head to foot. ‘ Besides the Amoco,’ says Captain COOK, ‘ they have marks impressed by a method unknown to us, of a very extraordinary kind. They are furrows of about a line deep, and a line broad, such as appear upon the bark of a tree which has been cut through, after a year’s growth. The edges of these furrows are afterwards indented by the same method, and, being perfectly black, they make a most frightful appearance *.’ The faces of the old men are almost totally covered with these marks. Those who are very young, like the women, black only their lips ; but, as they grow old, they gradually increase these supposed ornaments. The lines upon the face are generally spirals, and are drawn with great dexterity and elegance ; for the marks on one side correspond exactly with those on the other. The marks on the body have some resemblance to the foliage in old chased ornaments, and the convolutions of fillagra-work, in which they exhibit a great luxuriance of fancy. Besides, these people not only dye, but paint their skins with red oker. The dress of a New Zealander has an uncouth appearance. It consists of the leaves of the flag, split into two or three slips. When dry, the slips are interwoven with each other, and form a kind of stuff between netting and cloth. Of two pieces of this cloth they make a complete dress ; one of them is tied over the shoulders, and reaches as low as the knees ; and the other piece is wrapped round the waist, and reaches nearly to the ground. Beside this coarse flag, they make two sorts of cloth with a smooth surface, and very ingeniously manufactured. One sort resembles our canvas, but is much stronger. The other kind is formed by many threads lying very close one way ; and a few cross them the other, with

* Hawkesworth’s Narrative of Cook’s Voyage, vol. 3. p. 452.

with a view to bind them together. But these last are about half an inch asunder, resembling those round pieces of cane matting occasionally placed under the dishes of our tables. Both these kinds of cloth they ornament with neat stitched borders of various colours and patterns, not unlike those made use of in the samplers which our young girls work when at school. But the ornament they esteem the most consists of stripes of their dogs fur, placed at considerable distances from each other. Instead of fur, the red feathers of the parrot are sometimes employed.

In New Zealand, the women, contrary to the general disposition of the sex, seemed not to be so fond of finery as the men. They did not adorn their heads with feathers. Their garments were made in the same form, and of the same materials as those of the men.

Both sexes bore their ears. They gradually stretch the holes till they are so large as to admit a finger. Into these holes they put different kinds of ornaments, such as feathers, coloured cloth, bones of birds, and sometimes a twig of wood. Into the same receptacles they commonly put the nails they received from the ships. The down of the albatross, which is as white as snow, the women thrust through these holes. This down, when before and behind the hole in a bunch about the size of a fist, exhibits, we are told, a very singular, but not a disagreeable appearance. ‘ Besides the ornaments,’ says Captain COOK, ‘ that are thrust through the ears, many others ‘ are suspended to them by strings; such as chiffls or bodkins ‘ made of green talc, upon which they set a high value; the nails ‘ and teeth of their deceased relations, the teeth of dogs, and every ‘ thing else that they can get, which they think either curious or ‘ valuable. The women also wear bracelets and anclets, made of
‘ the

' the bones of birds, shells, or any other substances which they can perforate and string upon a thread. The men sometimes hanging a string, which went round the neck, a piece of green talc, or whalebone, somewhat in the shape of a tongue, with the rude figure of a man carved upon it; and upon this ornament they set a high value *.'

Their houses, Captain Cook informs us, are very inartificial, hardly equalling, except in size, a dog-kennel. They seldom exceed eighteen or twenty feet in length, eight or ten in breadth, and five or six in height, from the pole that forms the ridge, to the ground. The framing is made of wood; and both walls and roof consist of dried grass very closely stuffed together. Some of their houses are likewise lined with the bark of trees, which gives the inhabitants a very comfortable retreat. The roofs slope, like those of our barns. The door, or rather hole, is at one end of the edifice, and is no higher than to admit a person creeping on his hands and knees.

The *furniture* of their houses consists of very few articles; for one chest generally contains the whole, if we except their provision-baskets, the gourds which contain their fresh-water, and the hammers employed in beating their fern-roots. Some rude tools, their clothes, and feathers to stick in their hair, compose the rest of their treasure.

Possessing no vessel capable of boiling water, their *cooking* is wholly confined to baking and roasting, which are performed nearly in the same manner as by the natives of the South Sea islands.

These people are extremely ingenious in the construction of their *canoes*. The larger kind, which are often sixty-eight feet long, five feet broad, and three feet and an half deep, are chiefly employed in war. Of armed men, they will carry eighty or even an hundred. The head and stern of these canoes are ornamented with carved work of various kinds, some of which are not inelegant, and others have a most grotesque appearance. The head and stern of their smaller canoes, whose chief destination is for fishing, are ornamented with the figure of a man, whose face is ugly in the extreme, with a monstrous tongue lolling out of his mouth; and the eyes are composed of the white shells of sea-ears.

With regard to the *tools* employed in fabricating their different pieces of workmanship; they consist of adzes, axes, and chissels, which last they likewise use as augres for perforating or making holes in particular substances. Having no metals, or at least not knowing how to extract them from their respective ores, their adzes and axes are made of a hard black stone, or of a green talc, which has the properties both of hardness and toughness; and their chissels of human bones, or small fragments of jasper.

As to *civil government*, Captain COOK and the other gentlemen could procure little information. They, however, discovered, that, in this part of the island, the natives acknowledged one Chief, or King, whose name was *TERATU*. His territory, as an Indian monarch, is extensive; for, Captain COOK remarks, he was acknowledged from Cape Kidnappers to the north; and west as far as the Bay of Plenty, a length of coast upwards of eighty leagues *. In the
dominions

* Hawkeſworth's Narrative of Cook's Voyage, vol. 3. p. 470.

dominions of TERATU, there are several subordinate chiefs, who were held in great veneration, and who probably were the administrators of justice : ‘ For,’ says Captain COOK, ‘ upon our complaint to one of them, of a theft that had been committed on board the ship by a man that came with him, he gave him several blows and kicks, which the other received as the chastisement of authority, against which no resistance was to be made, and which he had no right to resent. Whether this authority was possessed by appointment or inheritance, we could not learn ; but we observed that the chiefs were all elderly men. In other parts, however, we learnt that they possessed their authority by inheritance *.

With regard to the *religion* of the New Zealanders, all that could be learnt was, that they recognize the influence of superior beings, of whom one is supreme, and the others subordinate, and have nearly the same notions of the origin of the world, and the production of mankind, as those of the Otaheiteans. What homage they pay to these deities could not be learnt ; for they seemed to have no places of public worship, like the Morais of the South Sea islands.

From New Zealand, Captain COOK proceeded to New Holland, now called *New South Wales*. He entered a bay on the east side of the island, which, from the number of new plants collected by Mr BANKS and the other gentlemen, received the appellation of *Botany Bay*. In their progress along the coasts of this bay, they saw several of the natives ; and they remarked a very singular circumstance in their oeconomy : Not one of them, men, women, or children, had the smallest vestige of clothing on any part of their bodies, but the whole, without reserve, was exposed to public view. Notwithstanding

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* Hawkesworth's Narrative of Cook's Voyage, vol. 3. p. 471.

ing this defenceless condition, they were extremely hostile, and so intrepid, that two men, armed with a lance of about ten feet in length, and a short club or flick, boldly attacked no less than forty of the ship's company. By way of enticement, and to procure reconciliation and mutual confidence, beads, ribbons, pieces of cloth, and other articles, were left in one of their houses. Experiments of this kind were frequently repeated, but without producing the desired effect; for, after examining these houses many days after the presents had been deposited, they were held by them in such sovereign contempt, that the natives seemed not even to have touched them. These bold people, however, after they had discovered the powerful effects of fire-arms, turned quite dastardly, and, whenever they perceived any of the Europeans, though invited by every possible expression of amity, would never admit any intercourse, but uniformly fled into the woods.

New Holland, or New South Wales, is an island of immense extent: Captain COOK sailed along its whole eastern coast, and found that its length, when reduced to a straight line, is at least twenty-seven degrees of latitude, amounting to about 2000 miles; hence he concludes, that its square surface must far exceed that of all Europe. In this great range of coast, he had frequent occasion to see many of the inhabitants. But, though some of them ventured near the ship, it was always with a hostile intention; and they could not, by alluring arts, bribes, and every possible mark of friendship, be induced to put any confidence in the Europeans: It was formerly mentioned, that the inhabitants of Botany Bay, both males and females, went stark naked, not employing even the simple veil of a fig-leaf. The same practice Captain COOK found to be universal through the whole extent of the east coast of New South Wales, or New Holland. As

far as Captain COOK and the other gentlemen could discover, this immense territory appeared to be totally uncultivated. The sea affords much more liberal supplies of food to the inhabitants than the land. The fishes are of various kinds ; but, if we except the mullet and a few shell-fish, the rest are unknown in Europe. The reef and the shoals are frequented by incredible numbers of the finest green turtle, and oysters of different species.

In this country, the number of inhabitants seems to bear no proportion to the extent of territory. ‘ We never saw,’ says Captain COOK, ‘ so many of them as thirty together but once, and that was ‘ at Botany Bay, when men, women, and children, assembled upon ‘ a rock to see the ship pass by : When they manifestly formed a ‘ resolution to engage us, they never could muster above fourteen or ‘ fifteen fighting men ; and we never saw a number of their sheds or ‘ houses together that could accommodate a larger party *.’

We are informed by Captain COOK, that the men of this country are of a middle size, generally well made, clean limbed, and remarkably active, nimble, and vigorous ; that there is a considerable expression in their countenances, and their voices are very soft and effeminate ; that their skins are so besmeared with dirt, that it is difficult to ascertain their real colour ; that the dirt makes them appear nearly as black as Negroes ; but that, by rubbing off the dirt, their genuine colour is a chocolate. Their features are by no means disagreeable, neither are their noses flat, nor their lips thick. Their teeth are white and even ; and their hair, though frequently cropped, is naturally long and black : It was, in general, matted and filthy, though they use neither oil nor grease ; yet what is astonishing, their heads

* Hawkesworth's Narrative of Cook's Voyage, vol. 3. p. 631.

heads were not infested with vermin. Their chief ornament is a bone, which is thrust through a hole bored in the cartilage which divides the nostrils. This bone is as thick as a man's finger, and six inches in length. It reaches quite across the face; 'and so effectually,' Captain COOK informs us, 'stops up both nostrils, that they are forced to keep their mouths wide open for breath, and snuffle so when they attempt to speak, that they are scarcely intelligible to each other. Our seamen, with some humour, called it their *sprit sail-yard*; and indeed it had so ludicrous an appearance, that, till we were used to it, we found it difficult to restrain from laughter *.' They likewise wear necklaces made of shells, cut very neatly, and strung together, bracelets of small cord wound about the upper part of the arm, and a small string of plaited human hair tied round the waist. Besides these, some of the natives used gorgets of shells which hung round the neck, and reached across the breast. Though they use no clothes of any kind, their bodies have two coverings, one of dirt, and the other of paint, which last. They paint their whole bodies and limbs with patches of red and stripes of white, and not without displaying some degree of taste. Upon their skin no vestiges of disease or sores were to be seen, except large scars disposed in irregular lines, which were the remains of wounds they had inflicted upon themselves as memorials of grief for the dead.

They seemed to have no fixed habitations; for neither towns nor villages were observed in the whole country. Their houses, or rather hovels, were equally wretched and destitute of conveniences as those at Terra del Fuego. At Botany Bay, where their habitations were best, they were just high enough for a man to sit upright in, but not sufficiently large to allow him to extend himself in any direction.

* Hawkesworth's *Narrative of Cook's Voyage*, vol. 3. p. 633.

region. They are built of pliable rods, about the thickness of a man's finger, which are bent in the form of an oven, by sticking the two ends in the ground, and then covering them with pieces of bark and palm-leaves. Under these houses, or sheds, the natives sleep, with their heels coiled up to their heads. In this strange position, one of those hovels will contain three or four persons. The furniture of these houses consists chiefly of an oblong vessel made of bark, and is used for bringing water from the spring; and a small bag, about the size of a moderate cabbage-net, which they make by laying threads, or fibres, loop within loop, something similar to our manner of making purses. 'This bag,' says Captain Cook, 'the man carries loose upon his back by a small string which passes over his head; it generally contains a lump or two of paint and resin, some fish-hooks and lines, a shell or two, out of which their hooks are made, a few points of darts, and their usual ornaments, which includes the whole worldly treasure of the richest man among them*.'

Fish is their principal *food*, though they contrive sometimes to kill the kangaroo, and even various kinds of birds. The yam is their chief article of vegetable food; but they also use several fruits, which their country spontaneously produces. Having no nets, they catch fish solely by striking, and by hook and line.

The *weapons* of the New Hollanders consist of spears and lances of different kinds. On the southern part of the coast, some of them had four prongs pointed with bone, and barbed. These barbed lances are dreadful weapons; for, when once they take place, they can never be extracted without tearing away the flesh. These weapons are thrown with great dexterity and force.

The

* Hawkesworth's Narrative of Cook's Voyage, vol. 3. p.

The *canoes* of the New Hollanders, especially on the southern part of the coast, are as rude as their habitations. They consist of a single piece of bark, about twelve feet in length, tied at the ends, and kept open in the middle by spars of wood. They draw but little water, and are so light that they easily go upon mud-banks in order to gather shell-fishes. Farther to the northward, the canoes are made of hollowed trunks of trees, about fourteen feet in length; and, as they are very narrow, to prevent their oversetting, they are furnished with an outrigger. These vessels, however, cannot carry more than four persons.

From New Holland, Captain COOK directed his course for *New Guinea*. Captain COOK, Dr SOLANDER, and Mr BANKS, with their attendants, amounting to twelve men, well armed, approached the shore in the pinnace without molestation, and even without seeing any of the natives. This island seemed to abound with plantains, cocoa-nuts, and bread-fruit: But the gentlemen, dreading bad consequences from the Indians, did not venture to cut down any of the trees. After advancing about a quarter of a mile from the boat, three of the natives, at about a hundred yards distance, rushed out of the wood, making a most hideous noise. ‘As they ran towards us,’ says Captain COOK, ‘the foremost threw something out of his hand, which flew on one side of him, and burnt exactly like gun-powder, but made no report. The other two instantly threw their lances at us; and, as no time was now to be lost, we discharged our pieces, which were loaded with small shot. It is probable that they did not feel the shot; for, though they halted a moment, they did ~~not~~ retreat; and a third dart was thrown at us. We then loaded our pieces with ball, and fired a second time. By this discharge it is probable that some of them were wounded; yet we

‘ had

‘ had the satisfaction to see that they all ran away with great agility *.’ While Captain COOK and his attendants were returning to their boat, several of the natives were seen coming round a point, which was at the distance of about five hundred yards. Their number appeared to be between sixty and a hundred. ‘ We now,’ says Captain COOK, ‘ took a view of them at our leisure. They made much the same appearance as the New Hollanders, being nearly of the same stature, and having their hair short cropped. Like them also they were all stark naked.—All this while they were shouting defiance, and letting off their fires by four or five at a time. What these fires were, or for what purpose intended, we could not imagine.—This wonderful phenomenon was observed from the ship, and the deception was so great, that the people on board thought they had fire-arms; and, in the boat, if we had not been so near as that we must have heard the report, we should have thought they had been firing volleys †.’

Captain COOK next reached the island of *Savu*, which lies in the latitude of about ten degrees south. This island produces a great variety of vegetables; as the fan-palm, the cocoa-nut, tamarind, limes, oranges, mangoes, maize, Guinea corn, rice, millet, callavances, water melons, cellery, marjoram, fennel, betle, areca, tobacco, cotton, indico, &c. The tame, or domestic animals, are likewise numerous and abundant; as buffaloes, sheep, goats, hogs, horses, asses, dogs, cats, fowls, pigeons, &c.

The natives of *Savu* are rather below than above the middling size. The women, particularly, are remarkably short and squat; their complexion is a dark brown, and their hair is universally black and lank. The men, in general, are well made, vigorous, and active,

VOL. II.

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and

* Hawkefworth's Narrative of Cook's Voyage, vol. 3. p. 656.

† Ibid. p. 658.

and have an uncommon variety in the disposition of their features. The countenances of the women, on the contrary, are uniformly alike. Both sexes, by means of pincers, eradicate the hair from their arm-pits; and the men do the same with the hair on their beards. Both men and women wear garments made of cotton cloth dyed blue, and have not an inelegant appearance. These people use a great variety of ornaments. Those who are comparatively wealthy, have chains of plated gold-wire round their necks. ‘ They have ‘ also ornaments of beads,’ Captain COOK informs us, ‘ which some ‘ wear round their necks as a solitaire, and others, as bracelets, upon ‘ their wrists. These are common to both sexes; but the women ‘ have, besides, strings or girdles of beads, which they wear round ‘ their waists, and which serve to keep up their petticoat. Both ‘ sexes had their ears bored, yet we never saw an ornament in any ‘ of them.—We saw some boys, who had spiral circles of thick ‘ brass wire passed three or four times round their arms, above the ‘ elbow; and some men wore rings of ivory, two inches in breadth, ‘ and above an inch in thickness, upon the same part of the arm. ‘ These, we were told, were the sons of Rajas, or Chiefs, who wore ‘ these cumbrous ornaments as badges of their high birth. Almost ‘ all the men had their names traced upon their arms, in indelible ‘ characters of a black colour; and the women had a square orna- ‘ ment of flourished lines, impressed in the same manner, just under ‘ the bend of the elbow*.’ Captain COOK likewise tells us, that he and the other gentlemen were struck with the similarity of these marks to those made by tattowing in the islands of the South Sea.

In *Savu*, the *boufes* are all constructed on the same plan, their dimensions being only larger or smaller in proportion to the wealth or rank

* Hawkesworth's Narrative of Cook's Voyage, vol. 3. p. 686.

rank of the proprietor. Some of them were four hundred feet in length, and others not above twenty. They are erected upon posts of wood, about four feet in height, one end of which is driven into the ground, and upon the other a floor of wood is laid. Upon this floor other posts are placed, and support a roof with sloping sides, like our barns.

With regard to *food*, these people use every tame animal in their possession, as hogs, horses, buffaloes, poultry; and they even prefer dogs and cats to sheep and goats. They are not very fond of fish, which is eaten chiefly by the poorer people. The fan-palm tree answers as a succedaneum for almost every other species of food both to man and beast. A kind of wine, called *tuac*, or *toddy*, is procured by wounding the flower-buds soon after they appear, and fixing under them little baskets, made of the leaves, which are so close that they easily retain fluids. This juice is collected every morning and evening, and supplies with drink the whole inhabitants of the island. Of the surplus of this valuable and salutary juice, the natives make both a syrup and a coarse sugar. This juice, along with the husks of rice, is given to the hogs, which, without any other nutriment, renders them prodigiously fat. In this island, both sexes are enslaved by the pernicious habit of chewing betle and areca, which they practise incessantly. With these substances they mix a kind of lime, made of shells and coral, and a quantity of tobacco. Hence their mouths are highly disgusting both to the sight and to the smell. The lime and tobacco rot their teeth in such a manner, that, in a short time, they are totally covered by the gums.

The island of Savu is divided into five principalities, each of which is under the dominion of a Raja, or Chief. When differences

arise among the inhabitants of any district, they are settled, without delay or appeal, by the Raja and his counsellors. There seemed not to be any intermediate rank between the Raja and the land-owners; and these last were esteemed and respected in proportion to the extent and value of their possessions. The inferior orders of the natives consist of manufacturers, labouring poor, and slaves. Like the peasants in some parts of Europe still, and formerly over all Europe, when the feudal system prevailed, the slaves descend, and are considered as appendages of the land. Their chief object of pride, like that of the Scots and Welch, is a long pedigree of respectable ancestors; and, of course, their veneration for antiquities of every kind is excessive. Near the principal town of his province, every successive Raja erects, as a memorial of his reign, a large stone. These stones are often of such an enormous size, that, how they could be brought to their present situation, it is difficult to conceive, even though all our mechanical powers had, for centuries past, been perfectly known among the natives of this island. These stones not only serve as records of the reigns of their Princes; but, when a Raja dies, a general feast is proclaimed through his dominions, and all his subjects assemble round the stones, and feast for weeks, and sometimes months, according to the quantity of live stock they can procure*.

‘ The *religion* of these people,’ says Captain Cook, ‘ according to Mr LANGE’s information, is an absurd kind of Paganism, every man chusing his own god, and determining for himself how he should be worshipped; so that there are almost as many gods and modes of worship as people. In their morals, however, they are said to be irreproachable, even upon the principles of Christianity.

‘ No

* See Hawkesworth’s Narrative of Cook’s Voyage, vol. 3. p. 694.

‘ No man is allowed more than one wife ; yet an illicit commerce
 ‘ between the sexes is in a manner unknown among them ; and in-
 ‘ stances of theft are very rare *.

From Savu, Captain COOK failed to *Java*, the capital of which is *Batavia*. Around this city, for several miles, is a continued range of country houses and gardens. Many of these gardens are very large, and, by some odd taste, or rather strange fatality, they are planted with numerous trees, which deprives the air of that salubrity formerly derived to the island from its being originally cleared of wood. These thick and almost impenetrable forests stand in a dead flat, which extends some miles beyond them, and is intersected in almost every direction by sluggish rivers, and still more by artificial canals for the navigation of small vessels. Besides, the fence of every field and garden is a ditch ; and, to add to the calamitous effects of an atmosphere impregnated with all the seeds of disease and death, the cultivated grounds are interspersed with noxious fens, bogs, and morasses.

‘ It is not strange,’ Captain COOK judiciously remarks, ‘ that the
 ‘ inhabitants of such a country should be familiar with disease and
 ‘ death. Preventive medicines are taken almost as regularly as food ;
 ‘ and every body expects the returns of sickness, as we do the sea-
 ‘ sons of the year. We did not see a single face in Batavia that in-
 ‘ dicated perfect health ; for there is not the least tint of colour in
 ‘ the cheeks either of man or woman. The women, indeed, are
 ‘ most delicately fair ; but, with the appearance of disease, there ne-
 ‘ ver can be perfect beauty. People talk of death with as much in-
 ‘ difference as they do in a camp ; and, when an acquaintance is said
 ‘ to

* See Hawkesworth's Narrative of Cook's Voyage, vol. 3. p. 697.

‘ to be dead, the common reply is, “ Well, he owed me nothing ;”
 ‘ or, “ I must get my money of his executors.”

Such a country, and such a picture of human misery, and of human destruction, impresses the mind with many of the most painful feelings. One would be tempted to wish, that an island, so deleterious to our species, should at once be swallowed up by the ocean. According to our conceptions, such a revolution would be a most benevolent act of Providence. But here we must pause. The Dutch, who are, perhaps, the most commercial, and, of course, the most selfish, interested, and unfeeling people in Europe, instead of draining this island, and clearing it of noxious wood, have augmented its natural evils, by multiplying trees, ditches, canals, and every other nuisance which could render the place still more destructive to its inhabitants. Here Providence is entirely exculpated. If the Dutch, instead of their former and present mode of management, had cleared the island of superfluous trees, drained its marshes, and erected their houses on more elevated situations, Java, now the almost certain grave of every European who ventures to reside in it for any length of time, might have been one of the most pleasant, as well as most wholesome islands on this globe.

This island presents to the view of strangers the most heterogeneous mixture of human beings, crossed in their production, by an amazing number of bizarre combinations. In the town of Batavia, and the adjacent country, the Indians, as they are called, are not the genuine natives of the island of Java, but spurious commixtures originating from the various islands from which the Dutch import slaves. In this country, both sexes bathe themselves in the river at least once a-
 day,

day, a practice, in hot climates, equally necessary to health and to personal delicacy.

Among the Batavians, the brutal, or rather mad custom, called *running a muck*, is very ancient and still prevails. To run *a muck*, in the original sense of the word, is first to get drunk with eating opium, and then run into the street with a naked sword, or other weapon, and kill whoever comes in the way, till the frantic person himself is either killed or taken prisoner. ‘Of this,’ says Captain COOK, ‘several instances happened while we were at Batavia; and one of the officers, whose business it is, among other things, to apprehend such people, told us, that there was scarcely a week in which he, or some of his brethren, were not called upon to take some of them into custody. In one of the instances that came to our knowledge, the party had been severely injured by the perfidy of women, and was mad with jealousy before he made himself drunk with opium; and we were told, that the Indian who runs *a muck* is always first driven to desperation by some outrage, and always first revenges himself upon those who have done him wrong. We were also told, that, though these unhappy wretches afterwards run into the street with a weapon in their hand, frantic and foaming at the mouth, yet they never kill any but those who attempt to apprehend them, or those whom they suspect of such an intention, and that whoever gives them way is safe. If the officer takes one of these *amocks*, or *mohawks*, as they have been called by an easy corruption, his reward is very considerable; yet, such is the fury of their desperation, that three out of four are of necessity destroyed in the attempt to secure them, though the officers are provided with instruments, like large tongs or pincers, to lay hold of them without coming

‘ coming within reach of their weapon *.’ Such of these unhappy wretches as are taken alive, are broken upon the wheel at the place where they committed the first murder.

With regard to *religion*, these people are not singular in observing the most absurd practices, and in believing the most ridiculous opinions. They believe that the Devil, whom, it is not incurious, they denominate *Satan*, is the being who gives rise to all the diseases and all the calamities of human life. Hence, when they are sick, or in any distressful circumstances, as a propitiation, they consecrate, to this ideal enemy of mankind, meat, money, &c. ‘ If,’ says Captain COOK, ‘ any one among them is restless, and dreams for two or three nights successively, he concludes that Satan has taken that method of laying his commands upon him, which if he neglects to fulfil, he will certainly suffer sickness or death, though they are not revealed with sufficient perspicuity to ascertain their meaning †.’ These people entertain another superstitious notion, which has still less connection with the general train of human conceptions. They believe that a woman, when delivered of a child, frequently, at the same time, brings forth a young crocodile, as a twin to the infant. ‘ They believe,’ Captain COOK informs us, ‘ that these creatures are received most carefully by the midwife, and immediately carried down to the river, and put into the water. The family in which such a birth is supposed to have happened, constantly put victuals into the river for their amphibious relation, and especially the twin, who, as long as he lives, goes down to the river, at stated seasons, to fulfil his fraternal duty; for the neglect of which, it is the universal opinion, that he will be visited with sickness or death ‡.’

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* Hawkesworth's Narrative of Cook's Voyage, vol. 3. p. 754. *et seqq.*

† Ibid. p. 755.

‡ Ibid. p. 756.

These crocodile twins, in that country, are called *Sudaras*, of which many ridiculous stories are related, and believed. The Bougis, Boccons, and Macassars, firmly persuaded that they have crocodile relations in their rivers, perform a periodical ceremony in remembrance of them. 'Large parties of them,' we are informed by Captain COOK, 'go out in a boat, furnished with great plenty of provisions, and all kinds of music, and row backwards and forwards, in places where crocodiles and alligators are most common, singing and weeping by turns, each invoking his kindred, till a crocodile appears, when the music instantly stops, and provisions, betle, and tobacco, are thrown into the water *.'

In Java, except the native Indians, the Chinese are the most numerous class of inhabitants, and are both an industrious and ingenious people. They employ themselves as ship-carpenters, smiths, joiners, tailors, makers of slippers, dyers of cotton, and embroiderers. Some of them are likewise dispersed through different parts of the country, where they cultivate gardens, sow rice, plant sugar-canes, or feed cattle and buffaloes, the milk of which they bring daily to Batavia for sale. Their industry is great and highly laudable; but other parts of their character are detestable. 'There is nothing,' Captain COOK remarks, 'clean or dirty, honest or dishonest, provided there is not too much danger of a halter, that the Chinese will not readily do for money. But, though they work with great diligence, and patiently undergo any degree of labour; yet, no sooner have they laid down their tools, than they begin to game at cards, dice, &c.' 'To gaming,' continues our author, 'they apply with such eagerness, as scarcely to allow time for the necessary refreshments of food and sleep; so that it is as rare to see a Chinese idle, as it is to see a

‘ Dutchman or an Indian employed. In manners, they are always civil, or rather obsequious ; and, in dress, they are remarkably clean and neat, to whatever rank of life they belong *.’

The Chinese, in general, are easily satisfied with food. That of the poorer people consists of rice, with a small proportion of flesh or fish. ‘ They have greatly the advantage,’ says Captain Cook, ‘ of the Mahometan Indians, whose religion forbids them to eat of many things which they could most easily procure. The Chinese, on the contrary, being under no restraint, eat, besides pork, dogs, cats, frogs, lizards, serpents of many kinds, and a great variety of sea-animals, which the other inhabitants of this country do not consider as food. They eat also many vegetables, which an European, except he was perishing with hunger, would never touch †.’

With regard to the *burial* of their dead, the Chinese observe a singular custom, or rather superstition. Where a body has been interred, they will not open the same ground a second time. Hence their burying-grounds, in the environs of Batavia, occupy many hundred acres ; and the Dutch, who grudge the waste of so much useful land, refuse to sell any for this purpose, without receiving most exorbitant prices. The money, however, is commonly raised. ‘ Under the influence,’ says Captain Cook, ‘ of this universal prejudice, they take an uncommon method to preserve the body entire, and prevent the remains of it from being mixed with the earth that surrounds it. They inclose it in a large thick coffin of wood, not made of planks joined together, but hollowed out of the solid timber, like a canoe. This being covered, and let down into the grave, is surrounded with a coat of their mortar, called *Chinam*. about eight or

‘ ten

* Hawkesworth's Narrative of Cook's Voyage, vol. 3. p. 76. † Ibid.

‘ ten inches thick, which, in a short time, becomes as hard as a stone.
 ‘ The relations of the deceased attend the funeral ceremony, with a
 ‘ considerable number of women that are hired to weep *.’

Slaves form another, and a numerous, class of the inhabitants of this country. The Dutch, the Portuguese, and even the Indians, are constantly attended and served by slaves, who are purchased from Sumatra, Malacca, and most of the Eastern islands. These slaves, Captain COOK informs us, ‘ are a very lazy set of people; but, as they
 ‘ do but little work, they are content with a little victuals, subsist-
 ‘ ing altogether upon boiled rice, and a small quantity of the cheapest
 ‘ fish. As they are natives of different countries, they differ from
 ‘ each other extremely both in person and disposition. The African
 ‘ Negroes, called here *Papua*, are the worst, and consequently may
 ‘ be purchased for the least money. They are all thieves, and
 ‘ all incorrigible. Next to these are the Bougis and Macassars,
 ‘ both from the island of Celebes: These are lazy in the highest de-
 ‘ gree; and, though not so much addicted to theft as the Negroes,
 ‘ have a cruel and vindictive spirit, which renders them extremely
 ‘ dangerous; especially as, to gratify their resentment, they will make
 ‘ no scruple of sacrificing life †.’ With respect to any punishment less than death, these slaves are entirely under the dominion of their masters.

From the island of Java, Captain COOK proceeded to the CAPE OF GOOD HOPE, a country, he remarks, which has been so often described, and is so well known in Europe, that he confines his observations to a few facts which had either been omitted or misrepresented by preceding voyagers.

P p 2

Notwithstanding

* HAWKESWORTH'S Narrative of Cook's Voyage, vol. 3. p. 761. † Ibid. p. 762.

Notwithstanding the favourable, and even splendid, representations which have repeatedly been given of this country, Captain Cook tells us, that, during his whole most extensive voyage, 'he never saw a more forlorn appearance, nor in reality a more sterile desert. The land over the Cape, which constitutes the peninsula formed by Table Bay on the north, and False Bay on the south, consists of high mountains, altogether naked and desolate. The land behind these to the east, which may be considered as the isthmus, is a plain of vast extent, consisting almost wholly of a light kind of sea-sand, which produces nothing but heath, and is utterly incapable of cultivation. All the spots that will admit of improvement, which together bear about the same proportion as one to a thousand, are laid out in vineyards, orchards, and kitchen-grounds; and most of these little spots lie at a considerable distance from each other *.' From these facts, Captain Cook remarks, there is great reason to conclude, that, in the interior parts of this country, the cultivated parts do not bear a greater proportion to those which are incorrigibly sterile. The Dutch have settlements at the distance of 'twenty-eight days' journey, (about nine hundred miles), from which provisions are brought by land to the Cape; 'so that,' says Captain Cook, 'it seems reasonable to conclude, that provisions are not to be had within a less compass. While we were at the Cape, a farmer came thither from the country, at the distance of fifteen days journey, and brought his young children with him. We were surprised at this, and asked him, if it would not have been better to have left them with his next neighbour? Neighbour! said the man, I have no neighbour within less than five days journey of me. Surely the country must be deplorably barren, in which those who settle only to raise provisions for a market, are dispersed at such distances

* Hawkesworth's Narrative of Cook's Voyage, vol. 3. p. 785.

‘ distances from each other. That the country is every where destitute of wood, appears to demonstration ; for timber and planks are imported from Batavia, and fuel is almost as dear as food *.’

The inhabitants of this place are chiefly Dutch, at least, they are more numerous here than in Batavia. In general, the women are handsome. Their skin is fine and clear ; and they have a bloom of complexion which is highly expressive of vigour and health. They make excellent mothers and mistresses of families ; and they are remarkably prolific. Here the air is very salubrious ; and diseases brought hither from Europe, or other remote regions, are speedily cured. Though both the soil and the climate are in some measure unfavourable to cultivation, and to the breeding of cattle ; yet industry, which often produces most surprising effects, has supplied this place with the greatest profusion of the necessaries, and even the luxuries of life.

‘ Of the natives of this country,’ Captain COOK remarks, ‘ we could learn but little, except from report ; for there were none of their habitations, where alone they retain their original customs, within less than four days journey from the town. Those that we saw at the Cape were all servants to Dutch farmers, whose cattle they take care of, and are employed in other drudgery of the meanest kind. These are, in general, of a slim make, and rather lean than plumb, but remarkably strong, nimble, and active. Their size is nearly the same with that of Europeans ; and we saw some that were six feet high. Their eyes are dull, and without expression. Their skins are of the colour of soot ; but that is, in a great measure, caused by the dirt, which is so wrought into the grain, that it cannot

* Hawkesworth's Narrative of Cook's Voyage, vol. 3. p. 786.

‘ cannot be distinguished from complexion ; for I believe they never
 ‘ wash any part of their bodies. Their hair curls strongly, not like
 ‘ a Negroe’s, but falls in ringlets about seven or eight inches long.
 ‘ Their clothing consists of a skin, generally that of a sheep, thrown
 ‘ over their shoulders ; besides which, the men wear a small pouch
 ‘ in the middle of the waist, and the women, a broad leather flap,
 ‘ both which hang from a girdle or belt that is adorned with beads
 ‘ and small pieces of copper. Both men and women wear necklaces,
 ‘ and sometimes bracelets of beads ; and the women wear rings of
 ‘ hard leather round their ankles, to defend them from the thorns,
 ‘ with which their country every where abounds *.’

The language of the Hottentots, Captain COOK tells us, seems to be scarcely articulate. While speaking, they have a strange mode, at very frequent intervals, of clucking with their tongues against the roof of their mouths. These clucks seem to have no other meaning than to divide what they say into sentences. They are naturally a modest, and even a shy people.

Captain COOK and the other gentlemen made many inquiries of the Dutch concerning the present state and manners of the Hottentots ; and he was told a number of particulars which he relates entirely on the credit of his informers. From them he learned that there are several nations of Hottentots within the Dutch settlements, who differ greatly in their customs and manner of living. All of them, however, are represented as peaceable and friendly, except one clan situated to the eastward, whom the Dutch distinguish by the name of *Bosch-men*, who live entirely by plunder, or rather theft ; for they are said never to make open attacks, but to steal the cattle privately
 in

† Hawkesworth’s Narrative of Cook’s Voyage, vol. 3. p. 789.

in the night. To defend themselves, however, when detected, they use lances and bows, the arrows of which they poison, some with the juice of herbs, and others with the venom of the serpent called *Cobra di Capello*. Stones, in the hands of these people, are likewise formidable weapons; for they can throw stones with such force and dexterity, as repeatedly to hit a dollar at the distance of a hundred paces. ‘As a defence against these freebooters,’ Captain COOK tells us, ‘the other Indians train up bulls, which they place round their towns in the night, and which, upon the approach of either man or beast, will assemble and oppose them, till they hear the voice of their masters encouraging them to fight, or calling them off, which they obey with the same docility as a dog*.’

Among the Hottentots, the chiefs, of whom many possess numerous herds of cattle, are commonly dressed in the skins of lions, tygers, or zebras, ornamented with fringes, and other trinkets, which indicate no despicable taste. ‘Both sexes,’ Captain COOK tells us, ‘anoint the body with grease, but never use any that is rancid or foetid, if fresh can be had. Mutton-suet and butter are generally used for this purpose.—We were told that the priest certainly gives the nuptial benediction by sprinkling the bride and bridegroom with his urine. But the Dutch universally declared, that the women never wrapped the entrails of sheep round their legs, as they have been said to do, and afterwards make them part of their food†.’

Captain COOK wished to determine a great question among natural historians, whether the Hottentot women have that fleshy flap
or

* Hawkesworth's Narrative of Cook's Voyage, vol. 3. p. 790. *et seqq.*

† Ibid. p. 791.

or apron distinguished by the appellation of the *sinus pudoris*. The following passage contains all that could be discovered with regard to that subject: 'Many of the Dutch and Malays, who said they had received favours from Hottentot women, positively denied its existence; but a physician of the place declared that he had cured many hundreds of venereal complaints, and never saw one without two fleshy, or rather skinny appendages, proceeding from the upper part of the *labia*, in appearance somewhat resembling the teats of a cow, but flat; they hung down, he said, before the *pudendum*, and were, in different subjects, of different lengths; in some not more than half an inch, in others three or four inches. These he imagined to be what some writers have exaggerated into a flap or apron, hanging down from the bottom of the abdomen, of sufficient extent to render an artificial covering of the neighbouring parts unnecessary *.'

In the island of Amsterdam, Captain COOK and his associates saw several places of worship, which the natives denominated *A-fa-tou-ca*. These houses were erected on the tops of artificial mounts, about eighteen feet high. They were of an oblong figure, and inclosed by a parapet of stone, nearly three feet in height. From this parapet, or wall, the mount, which was covered with green turf, rose in a gently sloping direction; and, on the top of it stood the house or temple, which had the same figure as the mount, and was about twenty feet long and fourteen, or sixteen broad. 'As soon,' says Captain COOK, 'as we came before the place, every one seated himself on the green, about fifty or sixty yards from the house. Presently came three elderly men, who seated themselves between us and it, and began a speech, which I understood to be a prayer, it

* Hawkesworth's Narrative of Cook's Voyage, vol. 3. p. 792.

‘ it being wholly directed to the house. This lasted about ten minutes;
‘ and then the priests, for such I took them to be, came and sat
‘ down along with us, when we made them presents of such things
‘ as we had about us *.’

These *Afiatoucas*, or places of worship, are frequent, and dispersed over the whole island. Instead of returning to the ship, the natives conducted Captain COOK and his retinue into the country by a road, which was about sixteen feet broad, and perfectly level. This road appeared to be a very common, and even a principal one; for many other roads, in different directions, intersected and terminated in it. The whole of these roads were inclosed on each side with neat fences made of reeds, and shaded from the scorching rays of the sun by fruit-trees. ‘ I thought I was transported,’ Captain COOK remarks, ‘ into the most fertile plains in Europe. There was not an inch of
‘ waste ground; the roads occupied no more space than was absolutely necessary; the fences did not take up above four inches
‘ each; and even this was not wholly lost; for in many were planted some useful trees or plants. It was every where the same;
‘ change of place altered not the scene. Nature, assisted by a little
‘ art, no where appears in more splendour than at this isle. In these
‘ delightful walks we met numbers of people; some travelling down
‘ to the ships with their burdens of fruit; others returning empty.
‘ They all gave us the road, by turning either to the right or left,
‘ and sitting down or standing, with their backs to the fences, till
‘ we had passed †.’

In these islands, as well as those of New Zealand, &c. their common method of salutation is by making their noses touch each other.

VOL. II.

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Their

* Cook's Voyage, 1772, &c. vol. 1. p. 198.

† Ibid. p. 201.

Their unfeigning mode of behaviour induced Captain COOK and the other gentlemen to think that thefe people were feldom difturbed either by foreign or domeftic broils; yet their weapons, fuch as fwords and fpears made of hard wood, bows and arrows, were very formidable. Some of their fpears have many barbs, and muft be exceedingly dangerous instruments of war. Another fingular cuftom is worthy of remark. When any prefent is given to them, if acceptable, they apply it to their heads. ‘ This manner of paying ‘ a compliment,’ fays Captain COOK, ‘ is taught them from their ‘ very infancy; for, when we gave things to little children, the ‘ mother lifted up the child’s hand to its head.— Sometimes they ‘ would look at our goods, and, if not approved, return them back; ‘ but, whenever they applied them to the head, the bargain was infallibly ftruck *.’

In thefe iflands, a cuftom of a very peculiar nature prevails. The greater part of the inhabitants, both male and female, were obferved to have loft one, or both of their little fingers †. This cuftom feemed not to be characteristic of rank, of age, or of fex; for, if fome young children be excepted, very few people were difcovered in whom both hands were perfect ‡. They likewife burn or make incifions in their cheeks; but, whether this ftrange practice was meant as expreffive of grief, or of any other violent paffion, could not be difcovered.

With regard to *government*, Captain COOK remarks, a perfon, endowed

* Cook’s Voyage, 1772, &c. vol. 1. p. 221.

† This fpecies of mutilation is not confined to the natives of the Friendly iflands
See Recherches Philofophiques fur les Americains, tom. 2. p. 253.

‡ Cook’s Voyage, Ibid. p. 222.

endowed with the character of *King*, * was pointed out to us; and we had no reason to doubt it. From this and other circumstances, I am of opinion, that the government is much like that of Otaheite; that is, in a king or great chief, who is here called *Arecker*, with other chiefs under him, who are lords of certain districts, and perhaps sole proprietors, to whom the people seem to pay great obedience.—I am of opinion, that all the land on *Tongatabu* (or Amsterdam island) is private property, and that there are here, as at Otaheite, a set of people who are servants or slaves, and have no property in land. It is unreasonable to suppose every thing in common in a country so highly cultivated as this *.—The high state of cultivation their lands are in, must have cost them immense labour. This is now amply rewarded by the great produce, of which every one seems to partake. No one wants the common necessaries of life; joy and contentment are painted in every face. Indeed, it can hardly be otherwise; an easy freedom prevails among all ranks of people; they feel no wants which they do not enjoy the means of gratifying; and they live in a clime where the painful extremes of heat and cold are equally unknown †.

The existence of CANNIBALS, or eaters of human flesh, has often been mentioned by voyagers, and as often discredited by most philosophers. But Captain COOK, and other late navigators, have removed every doubt concerning this, to us at least, most shocking practice. In New Zealand, some of Captain COOK's officers, when visiting the habitations of the natives, saw several human thigh-bones, from which the flesh had been but recently picked ‡. A few days after this discovery, another party of officers went ashore in

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Queen

* Cook's Voyage, 1772, &c. vol. I. , 223. &c. † Ibid.

‡ Ibid. p. 241.

Queen Charlotte's Bay, 'where they saw the head and bowels of a youth, who had lately been killed, lying on the beach, and the heart stuck on a forked stick, which was fixed to the head of one of the largest canoes. One of the gentlemen bought the head, and brought it on board, where a piece of the flesh was broiled and eaten by one of the natives, before all the officers, and most of the men.*' When this strange affair happened, Captain Cook was on shore. After returning on board, he was informed of the circumstances just related. He found the quarter-deck crowded with natives, 'and the mangled head, or rather part of it, (for the under jaw and lip were wanting), lying on the tafferal. The skull had been broken on the left side, just above the temple; and the remains of the face had all the appearance of a youth under twenty. The sight of the head, and the relation of the above circumstances, struck me with horror, and filled my mind with indignation against these cannibals. Curiosity, however, got the better of my indignation, especially when I considered that it would avail but little; and being desirous of becoming an eye-witness of a fact which many doubted, I ordered a piece of the flesh to be broiled and brought to the quarter-deck, where one of these cannibals eat it with surprising avidity. This had such an effect upon some of our people as to make them sick †.'

Captain Cook, however, after expressing a just abhorrence against this detestable, and, to us, most unnatural practice, candidly acknowledges, that these people eat only those whom they slay in battle. TURIA, who frequently expostulated with them against this worse than brutal custom, received for reply, 'Can there be any harm in eating

* Cook's Voyage, 1772, &c. vol. 1. p. 243.

† Ibid. and p. 244. 245.

‘ eating our enemies, whom we have killed in battle? Would not those very enemies have done the same to us * ?’

The New Zealanders, by their general deportment, and active vigilance, seem to live under perpetual apprehensions of being destroyed by each other. Most of their tribes have either actually, or imagine they have sustained wrongs from some other tribe, and, of course, are always watching for opportunities of revenge. ‘ And, perhaps,’ Captain COOK remarks, ‘ the desire of a good meal may be no small incitement.—Their method of executing their horrible designs, is by stealing upon the adverse party in the night; and, if they find them unguarded, (which, however, I believe is seldom the case), they kill every one indiscriminately, not even sparing the women and children. When the massacre is completed, they either *feast* and *gorge* themselves upon the spot, or carry off as many of the dead bodies as they can, and *devour* them at home, with acts of brutality too shocking to be described †.’ To give quarter, or to take prisoners, constitute no part of military law in New Zealand. These perpetual hostilities, and the shocking manner of conducting them, produce in the inhabitants an habitual circumspection and dread. ‘ Indeed,’ says Captain COOK, ‘ no other men can have such powerful motives to be vigilant, as the preservation both of body and *soul* depends upon it. For, according to their system of belief, the *soul* of the man whose flesh is devoured by the enemy, is doomed to a *perpetual fire*; while the soul of the man whose body has been rescued from those who killed him, as well as the souls of all who die a natural death, ascend to the habitations of the gods. I asked, Whether they eat the flesh of such

of

* Cook's Voyage, 1772, &c. vol. I. p. 246.

† Cook's Voyage, 1776, &c. vol. I. p. 137.

of their friends as had been killed in war, but whose bodies were saved from falling into the enemy's hands? They seemed surprised at the question, which they answered in the negative, expressing some abhorrence at the very idea. Their common method of disposing of their dead, is by depositing their bodies in the earth; but, if they have more of their slaughtered enemies than they can eat, they throw them into the sea*.

THESE respectable, and some of them recent authorities, are fully sufficient to show that cannibals in some parts of the New World exist even in our own times. From authorities no less respectable, I shall proceed to show, that the practice of *eating human flesh* was formerly not uncommon in various regions of the Old Continent. The ancient Greeks of Peloponnesus, now known by the appellation of *Morea*, went, like the beasts of the forest, perfectly naked, and eat *human flesh* with avidity, at which, PALMERIUS remarks, the modern practice of the American nations forbids us to wonder. But certain sacred nymphs, who officiated in the temples, reprobated the practice of eating human flesh, and likewise taught the inhabitants of that district of Greece, for the sake of modesty, to cover themselves with the inner bark of trees, or with the skins of beasts†. The Jews, so late as the days of Trajan, having overcome a considerable army composed of Greeks and Romans, near *Cyrene*, eat those who fell in battle, devoured their entrails, anointed themselves with their blood,

* Cook's Voyage, &c. vol. 1. p. 138.—See other instances of a similar nature in Forster's Voyage, vol. 1. p. 512. vol. 2. p. 77. 300. 315.

† Palmer. Græc. Antiq. descript. p. 55. 56.

blood, and made clothes of their skins *. The Padaei, a nation of India, says HERODOTUS, live upon raw flesh. When either males or females approached toward old age, they were *slain* and *devoured* by their nearest relations or neighbours. They were never allowed to be emaciated by disease, lest their *flesh* should become corrupted, and, of, course, unpalatable. They were seldom, however, permitted to reach this stage of disease; for they were slaughtered and *eaten* long before that period arrived †.

The Myfi, a people of Asia, in the neighboured of Troas, killed and *eat* such prisoners as they took in war ‡. Why, says Hieronymus, do I speak of other nations, when I saw, while I was in Gaul, the *Scots*, who inhabit a considerable part of the island of Britain, *eat human flesh*; and, when they found in the woods shepherds and keepers of hogs, they cut off the *hips* of the men and the *breasts* of the women, which they esteemed as the most delicious repast §. In describing the Scythians, HERODOTUS informs us, that to the north of a certain desert, a nation existed in his time called *Androphagi*, because they feasted on *human flesh* §. HERODOTUS, in the same book, makes frequent mention of these *Androphagi*. ANTONY, with a view to overturn the Roman government, took a solemn oath from his associates, which was attended with a most infamous solemnity. After sacrificing a *boy*, the oath was administered over his entrails, which afterwards were *eaten* by these conspirators **.

IN

* Dio Cass. Rom. Hist. edit. Xiphilin. p. 556.

† Herodot. Thalia, f. lib. 3. edit. Gronov. p. 199.

‡ Flor. lib. 4. c. 12.; and Schedius de Diis Germanis, p. 403.

§ Hieron. advcr. Jovian. lib. 2.

§ Herodot. Melpomene, f. lib. 4. § 18.

** Dio Cass. edit. Xiphilini, 27.

IN New Zealand, there are no *Morais*, or other places of public worship. But they have priests, who alone address the gods in propitiatory prayers for the success of enterprises against enemies, of fishing parties, and of other temporal affairs. Notwithstanding the hostile state and almost perpetual wars carried on among the different tribes into which these people are divided, travelling strangers, who have no evil intentions, are well received and entertained during their stay, which, however, it is expected, will be no longer than is necessary to execute the business they came to transact. Here polygamy is permitted; and it is not unusual for one man to have two or three wives. The New Zealanders seem to be perfectly satisfied with the small portion of knowledge they possess, without attempting to increase it. In them, new and even surprising objects excite little or no surprise; and it is difficult, even for a moment, to fix their attention. This species of apathy, though contrary to our ideas, and almost our comprehension, is common to most of the natives of the South Sea islands. Curiosity, or rather the love of examining new objects, and of acquiring knowledge, we have always been led to consider, and to feel, as one of the strongest propensities in human nature. But in most of the South Sea islands, and among most savage people, the natives seem to want this propensity; if otherwise, it has little or no influence upon their minds.

DRAMATIC ENTERTAINMENTS, or the recital of comic or tragic ideas in the form of dialogue, together with real or allusive representations, are, in the Old World, as ancient as the records of history.

In

In many of the detached islands scattered over the great Pacific Ocean, public amusements of this kind are not unfrequent.

When Captain COOK and the other gentlemen were at Otaheite, in April 1773, they were conducted to the theatre, 'we were entertained with a dramatic *heava*, or play, in both dancing and comedy. The performers were five men, and one woman, who was no less a person than the King's sister. The music consisted of three drums only; it lasted about an hour and an half, or two hours; and, upon the whole, was well conducted. It was not possible for us to find out the meaning of the play. Some part seemed adapted to the present time, as my name was frequently mentioned. Other parts were certainly unconnected with us. It apparently differed in nothing, that is, in the manner of acting it, from those we saw at Ulietia, in my former voyage. The dancing-dress of the lady was more elegant than we saw there, by being decorated with long tassels, made of feathers, hanging from the waist downward. As soon as all was over, the King himself (OTOO) desired me to depart; and sent into the boat different kinds of fruit and fish, ready dressed *.'

In September, same year, Captains COOK and FURNEAUX paid a visit to OAO, a considerable chief in Ulietia, who entertained them with a comedy or dramatic *heava*. 'The music,' Captain Cook informs us, 'consisted of three drums; the actors were seven men, and one woman, the Chief's daughter. The only entertaining part of the drama, was a theft committed by a man and his accomplice, in such a masterly manner, as sufficiently displayed the genius of these people in this vice. The theft is discovered before the thief

VOL. II.

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has

* Cook's Voyage, 1772, &c. vol. I. p. 156.

‘ has time to carry off his prize ; then a scuffle ensues with those set to guard it, who, though four to two, are beat off the stage, and the thief and his accomplice bear away their plunder in triumph *.’

Beside a species of regular drama, the islanders of the Pacific Ocean exhibit, as public amusements, *wrestling* and *boxing* matches, which they perform with great spirit and dexterity †.

MISCELLANEOUS MANNERS and CUSTOMS observed by the South Sea Islanders.

AMONG these people, when they wish to express friendship, or at least the absence of hostile intentions, it is a universal custom to pre-
of trees ‡.

In the islands of Amsterdam, Middleburg, &c. which have been distinguished by the appellation of the *Friendly islands*, a very odd custom prevails. It was remarked by our voyagers, that the greater part of the inhabitants, males as well as females, had lost one or both of their *little fingers*. ‘ We endeavoured,’ says Captain Cook, ‘ but in vain, to find out the reason of this mutilation ; for no one would take any pains to inform us. It was neither peculiar to rank, age, or sex ; nor is it done at any certain age, as I saw those of all ages on whom the amputation had been just made ; and, except some young children, we found few who had both
‘ hands

* Cook’s Voyage, 1772, &c. vol. 1. p. 173. For several other, but similar dramatic representations and dances, see Ibid. p. 295. 307. &c.

† Ibid. p. 349. &c.

‡ Ibid. p. 81.

‘ hands perfect *.’ In Captain COOK’s second voyage to these islands, he discovered that this operation is performed when the natives labour under any grievous disease, and think themselves in danger of dying; for they imagine that the Deity will accept of the little finger, as a sacrifice sufficiently efficacious to procure the recovery of their health †. The same custom of cutting off the little fingers, is related by Mr G. FORSTER, who sailed along with Captain COOK. Mr FORSTER thought he discovered, that these strange mutilations were intended as marks, or remembrancers, of the death of near relations ‡.

Captain COOK informs us, that the natives of the *Marquesas islands* are unexceptionably the most handsome race of people to be met with in the South Sea. ‘ For fine shape, and regular features, they perhaps surpass all other nations: Nevertheless, the affinity of their language to that spoken in Otaheite and the Society isles, shews that they are of the same nation. OEDIDEE could converse with them tolerably well, though we could not; but it was easy to see that their language was nearly the same. The men are punctured, or curiously *tattooed*, from head to foot. The figures are various, and seem to be directed more by fancy than custom. These punctuations make them look dark; but the women, who are but little punctured, youths, and young children, who are not at all, are as fair as some Europeans ||.’

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In

* Cook’s Voyage, 1772, vol. 1. p. 222. The same custom prevails in some parts of America. See *Recherches Philosophiques sur les Americains*, tom. 2. p. 253.

† Cook’s Voyage, 1776, &c. vol. 1. p. 403.

‡ Forster’s Voyage round the World, vol. 1. p. 435. 471.

|| Cook’s Voyage, 1772, &c. vol. 1. p. 308.

In most of the South Sea islands, it is a general custom, not to suffer the women, of whatever rank, to eat in company with the men *.

With regard to the natives of *New Zealand*, their colour varies from a pretty deep black to an olive or yellowish tinge. Their faces, in general, are round, with full, though not uncommonly thick lips. Neither are their noses flat. Their teeth are broad, white, and well set; and their eyes are large, and move with great freedom. Their hair is black, straight, and strong. Among the young people, the countenance is generally open and free; but, in most of the men, it has a serious, and sometimes a sullen air. The women are not distinguished from the men by many peculiar graces either in form or features. In both sexes, the dress is the same, and consists of an oblong garment, about five feet long and four in breadth, made of a silky flaxen substance, which they obtain from a certain sedgy plant. ‘Over this garment,’ Captain Cook informs us, ‘many of them wear mats, which reach from the shoulders to near the heels. But the most common outer-covering is a quantity of the above sedgy plant, badly dressed, which they fasten on a string to a considerable length, and, throwing it about the shoulders, let it fall down on all sides, as far as the middle of the thighs. When they sit down with this upon them, either in their boats or upon the shore, it would be difficult to distinguish them from large gray stones, if their black heads, projecting beyond their coverings, did not engage one to a stricter examination †.’

In their heads they fix feathers, or combs made of bone or wood,
by

* Cook's Voyage, 1772, &c. vol. 1. p. 351. et

† Cook's Voyage, 1776, &c. vol. 1. p. 154.

by way of ornaments. These they adorn with pearl shell, or the thin inner skins of leaves. Both males and females wear ear-rings composed of jasper, bits of cloth, or beads, when these last can be procured; and some of them have the *septum* of the nose pierced for the insertion of similar trinkets. The custom of *tattooing*, or puncturing the face with spiral lines and other figures, stained with a black or deep blue colour, is likewise common. Both sexes frequently besmear their heads and faces with a reddish ochre, mixed with grease; and the women occasionally wore necklaces of sharks teeth, or bunches of a kind of long beads, which seemed to be made of the leg-bones of small birds.

The New Zealanders generally live in caves, in companies of about forty or fifty. They build their huts, which are poor and miserable dwellings, contiguous to each other. They seemed to have no other furniture in these hovels than some small baskets or bags, in which they kept their fishing-hooks, and other trifles. They subsist chiefly by fishing. For this purpose they employ either nets of various kinds, or hooks made of wood, and pointed with bone. Their boats, or canoes, are well built with planks raised upon each other, and strongly fastened with withes. Some of them are fifty feet in length, and so broad that they can sail without the aid of an outrigger. They have no other mode of dressing their fish than by roasting, or rather a kind of baking; for they seem to know nothing of the art of boiling. When the sea is too tempestuous, they content themselves, instead of larger fishes, with muscles, sea-ears, and other shell-animals which they can procure, in great quantities, upon the rocks and sea-beach. They indeed breed considerable numbers of dogs for eating; but these cannot be considered as a principal article of their food; for, as there appears not the least mark of cultivation.

tivation on their ground, they depend chiefly on the sea for their subsistence. ‘ Their method of feeding,’ Captain COOK tells us, ‘ corresponds with the nastiness of their persons, which often smell disagreeably from the quantity of grease about them, and their clothes never being washed: We have seen them *eat the vermin*, with which their heads are sufficiently stocked. They also used to devour, with the greatest eagerness, large quantities of stinking train oil, and blubber of seals, which we were melting at the tent, and had kept near two months; and, on board the ships, they were not satisfied with emptying the lamps, but actually swallowed the cotton, and fragrant wick, with equal voracity *.’—‘ They shew, however,’ continues our author, ‘ as much ingenuity, both in invention and execution, as any uncivilized nations under similar circumstances. For, without the use of any metal tools, they make every thing by which they procure their subsistence, clothing, and warlike weapons, with a degree of neatness, strength, and convenience for accomplishing their several purposes †.’—‘ Their public contentions are frequent, or rather perpetual; for it appears, from their number of weapons, and dexterity in using them, that war is their principal profession ‡.’

When about to attack the enemy, they begin a war-song, and raise their passion to a degree of fury, which is accompanied with a horrible distortion of their eyes, mouths, and tongues. All these assumed dreadful appearances are employed with a view to terrify their enemies; ‘ which,’ says Captain COOK, ‘ to those who have not been accustomed to such a practice, makes them appear more like demons than men, and would almost chill the boldest with
fear.

* Cook’s Voyage, 1776, &c. vol. 1. p. 158.

† Ibid. p. 159.

‡ Ibid. p. 161.

‘ fear. To this succeeds a circumstance, almost foretold in their
 ‘ fierce demeanour, horrid, cruel, and disgraceful to human nature ;
 ‘ which is, cutting in pieces, even before being perfectly dead, the
 ‘ bodies of their enemies, and, after dressing them on a fire, *devour-*
 ‘ *ing the flesh*, not only without reluctance, but with peculiar satis-
 ‘ faction *.’

From this shocking picture, we should naturally be led to think that a people of this description must be destitute of every feeling belonging to humanity ; yet, Captain COOK informs us, they lament the loss of relations and friends with a violence of expression which indicates the most tender affection, and the keenest regret : ‘ For,’ says he, ‘ both men and women, upon the death of those connected
 ‘ with them, whether in battle or otherwise, bewail them with the
 ‘ most doleful cries ; at the same time cutting their foreheads and
 ‘ cheeks with shells or pieces of flint, in large gashes, until the blood
 ‘ flows plentifully, and mixes with their tears.’ What is still more characteristic of the warm, or rather violent, affections of these islanders, upon the return of friends who have been for some time absent, they express *joy* by the same cuttings as they express *grief*†.

At *Tongataboo*, another of the islands in the South Sea, Captain COOK and his associates supped with FUTTAFAIHE, one of their Chiefs. ‘ When supper was over,’ says the Captain, ‘ abundance
 ‘ of cloth was brought for us to sleep in ; but we were a good deal
 ‘ disturbed by a singular instance of luxury, in which their principal
 ‘ men indulge themselves ; that of being beat while they are asleep.
 ‘ Two women sat by FUTTAFAIHE, and performed this operation,
 ‘ which is called *tooge tooge*, by beating briskly on his body and
 ‘ legs, with both fists, as on a drum, till he fell asleep, and continuing
 ‘ it

* Cook's Voyage, 1776, &c. vol. 1. p. 161 162.

† Ibid. p. 162.

‘ it the whole night, with some short intervals. When once the person is asleep, they abate a little in the strength and quickness of the beating ; but resume it, if they observe any appearance of his waking *,’

Among savage nations, in general, the men are remarkably harsh and inattentive to the women. They are obliged to perform the dirtiest and most laborious offices. This is, in a peculiar manner, the condition of the fair sex in the island of Tanna. The women carry all the burdens, and the men proceed unconcernedly without any incumbrance, except their arms. ‘ It appeared to me,’ says Captain COOK, ‘ that the women were not held in any esteem by the men, but obeyed upon the smallest sign ; and many were seen in the humiliating guise of drudges and beasts of burden †.’

It is not unworthy of remark, that chastity, and modesty, or a desire of concealing certain actions, which have long been supposed to be inherent qualities of the human mind, seem, from the experience of the voyagers whose writings I have so often quoted above, to be local ideas only, and totally unknown in a state of uncultivated nature ‡.

Human sacrifices.—In the island of Otaheite, where the general manners of the inhabitants are gentle, obliging, affectionate, and friendly to strangers, it is astonishing that *human sacrifices*, on the approach of war with any of the neighbouring islands, or other interesting occasions, should be a universal practice. When such sacrifices are ordered by their Kings or Chiefs, or Priests, the unhappy victims have

* See Cook's Voyage, 1776, &c. vol. 1. p. 323. 344. † Ibid. p. 324.

‡ See Forster's Voyage, vol. 2. p. 230. *et alibi passim*, and Genesis, chap. 2. verse 25. ‘ And they were both naked, the man and his wife, and were not ashamed.

have luckily no intimation of their intended fate. They are pitched upon by the Chiefs, and persons are appointed to murder them privately. Like many other oppressive and unjust practices in feudal governments, the victims singled out for sacrifice are always selected from the lowest of the people. This institution seems at least to be founded in wisdom. If they attempted to sacrifice men in the higher ranks of the state, internal broils and commotions would be unavoidable. After a number of superstitious rites, and many prayers performed both by the chief and subordinate priests, the corpse is at last laid upon the most conspicuous part of the *Morai*, or place of worship. The prayers and ceremonies were again renewed; and, when these were finished, the body was buried in the ground.

Beside human sacrifices, a practice which is not peculiar to Otaheite, but extends over a great number, perhaps the whole, of the islands in the great Southern Ocean, they sacrifice dogs, hogs, &c. and make offerings of various articles, particularly those of provisions, to their *Eatooa* or God.

Another circumstance, recorded by Captain COOK, of the frequency of human sacrifices in these islands, must not be omitted. ‘When I described,’ says our great and intelligent voyager, ‘the *Natibe* at *Tongabattoo* (another island) I mentioned, that, on the approaching sequel of that festival, we had been told, that ten men were to be sacrificed. This may give us an idea of the extent of this religious massacre on that island. And, though we should suppose, that never more than one person is sacrificed on any single occasion at Otaheite, it is more than probable, that these occasions happen so frequently, as to make a shocking waste of the human race; for I counted no less than forty-nine skulls of former victims, lying be-

‘ fore the *Morai*, where we saw one more added to the number.
 ‘ And, as none of these skulls had, as yet, suffered any considerable
 ‘ change from the weather, it may hence be inferred, that no great
 ‘ length of time had elapsed, since, at least, this considerable number
 ‘ of unhappy wretches had been offered on this altar of blood *.’

The human sacrifice described above, happened on the 2d day of September 1777; and a second was performed on the 12th of the same month. ‘ This second instance,’ Captain COOK remarks, ‘ within the course of a few days, was too melancholy a proof, how
 ‘ numerous the victims of this bloody superstition are amongst this
 ‘ humane people †.’

Human sacrifices, Captain COOK informs us, are more frequent in the Sandwich than in any of the other islands. ‘ These horrid
 ‘ rites,’ says he, ‘ are not only had recourse to upon the commence-
 ‘ ment of war, and preceding great battles, and other signal enter-
 ‘ prises; but the death of any considerable Chief calls for a sacrifice
 ‘ of one or more *Towtows*, that is, vulgar or low persons, according
 ‘ to his rank; and we were told, that *ten* men were destined to suf-
 ‘ fer on the death of TERREEOBOO ‡,’ (a great Chief).

Many other instances of this detestable practice are mentioned by Captain COOK and other voyagers on the Southern Ocean. That it was, in ancient times, very universal among the nations of Europe, we learn from historians of undoubted authority. From the writings of MOSES, which are perhaps of greater antiquity than any com-
 position

* See Cook's Voyage, 1776, &c. vol. 2. p. 42.

† Ibid. p. 53.; and vol. 3. p. 132, &c.

‡ Ibid. p. 161. Ibid. vol. 1. p. 351. 495.

position which has been transmitted to us, it appears that human sacrifices, in all their horrors, were, at that early period, not unfrequent. The story of ABRAHAM about to sacrifice his only son ISAAC, even supposing it to be allegorical, evinces that the practice was familiar to the people of that country. One passage, in this story, is so curious, that I cannot refrain from transcribing it. ‘ And they came to the place
 ‘ which GOD had told him of, and ABRAHAM built an altar there,
 ‘ and laid the wood in order ; and bound ISAAC his son, and laid
 ‘ him on the altar upon the wood. And ABRAHAM stretched forth
 ‘ his hand, and took the knife to slay his son. And the angel of the
 ‘ LORD called unto him out of heaven, and said, ABRAHAM,
 ‘ ABRAHAM ; and he said, Here am I. And he said, Lay not thine
 ‘ hand upon the lad, neither do thou any thing unto him ; for now
 ‘ I know that thou fearest GOD, seeing thou hast not withheld thy
 ‘ son, thine only son, from me *.’

From this passage, it is not unworthy of remark, that, in the days of ABRAHAM, when a human sacrifice was to be offered up, the unhappy victim was slain before he was committed to the flames ; and that the same mode is still observed in the islands of the Pacific Ocean ; with this difference, that, in these islands, the victims are both selected and murdered privately, which renders it impossible for them to have any idea of their destination ; but, from the history of ABRAHAM and his son ISAAC, it appears, that, in the eastern countries, the devoted persons must have known their dreadful fate long before the fatal blow was given. The preparatory steps were shocking to human nature. An altar erected ; faggots of wood laid upon the altar ; the miserable wretch bound, and laid upon the wood ;

* Genesis, chap. 22. verse 9, &c.

and the instrument by which he was to be butchered presented to his eyes !

In the Old Testament, there are many allusions to the practice of sacrificing human beings. In the 18th chapter of Leviticus, verse 21. we have the following passage : ‘ Thou shalt not let any of thy ‘ feed pass through the fire to Molech *.’ Some commentators think, that, by *passing through the fire to Molech*, signifies a lustration only, and not an actual sacrifice. But this idea is completely removed by the Psalmist DAVID †. ‘ Yea, they sacrificed their sons and their ‘ daughters unto devils, and shed innocent blood, even the blood of ‘ their sons and their daughters, whom they sacrificed unto the idols ‘ of Canaan.’ In the prophet HOSEA, we have an unequivocal instance of *human sacrifices* being sometimes practised by the Jews. ‘ And ‘ now they sin more and more, and have made them molten images ‘ of their silver, and idols according to their own understanding : ‘ They were all the work of the craftsmen : They say one to another ‘ whilst they *sacrifice a man*, let them kiss the calves ‡.’ The following passage in the prophecies of Jeremiah shows that this detestable practice was not uncommon in the Jewish nation : ‘ And they have ‘ built the high places of Tophet, which is in the valley of Ben- ‘ hinnom, to burn their sons and their daughters in the fire ||.’ The same prophet, in another chapter, tells us, that ‘ they have filled ‘ this place also with the blood of innocents, and they have built the ‘ high places of BAAL, to burn their sons with fire for burnt offerings ‘ unto BAAL. Therefore this place shall no more be called Tophet, ‘ nor

* The same prohibition is repeated in Deuteronomy, chap. 18. v. 10.; 2d Kings, chap. 16. v. 3.; Ibid. chap. 17. v. 17.; Ibid. chap. 23. v. 10.

† Psalms, chap. 16. v. 37. 38. ‡ Hosea, chap. 13. v. 2.

‡ Jeremiah, chap. 7. v. 31.

‘ nor the valley of Benhinom, but the valley of *slaughter* *.’ A similar passage occurs in the writings of the prophet EZEKIEL : ‘ More-
 ‘ over, thou hast taken thy sons and thy daughters, whom thou hast
 ‘ born unto me, and these hast thou sacrificed unto *them* (i. e. idols)
 ‘ to be devoured †.’ SELDEN likewise informs us, that, in Syria, men, women, and children were sacrificed to the idol *Molech* ; and, to prevent the relations of the miserable victims from hearing their cries while burning in the flames, drums and other loud sounding instruments were employed till their lives were completely extinguished ‡. The same practices were continued among the Carthaginians even in the days of TIBERIUS CÆSAR ||. When the Carthaginians were overcome in battle by AGATHOCLES, King of Sicily, they imagined that the gods were angry with them ; and, to appease these gods, two hundred sons of the nobles were ordered to be sacrificed. What exhibits a still stronger picture of the barbarous manners and superstition of these people, such noblemen as happened to have no sons of their own, *purchased* boys, for this inhuman purpose, from poor people §.

PLUTARCH informs us, that, in the days of THEMISTOCLES, three young captives were, by his order or consent, sacrificed to BACCHUS **. It was a practice among the Scythians, says HERODOTUS, to sacrifice to MARS one out of every hundred prisoners taken in war ††. It does not appear that they eat the flesh of their enemies, but contented themselves with drinking their blood ‡‡. It is
 not

* Jeremiah, chap. 19. v. 4. 5. 6.

† Ezekiel, chap. 16. v. 20. Ibid. chap. 23. v. 37. & 39.

‡ Selden de Diis Syris, p. 170. 172. 173. ; and Schedius de Diis Germanis, p. 401.

|| Selden de Diis Syris, p. 182.

§ Ibid. p. 181. ; and De Divin. Instit.

cap. 21.

** Plutarch, edit. Bryan. tom. 1. p. 262.

†† Herodot. Melpomene, edit. Xyphilin. p. 241.

‡‡ Ibid. § 64.

not here unworthy of remark, that the Scythians, like the North Americans, scalped the heads of those whom they slew in battle, and exhibited these scalps as trophies of valour and prowess *. The Scythians, in making solemn treaties, or private covenants, likewise drew blood from the veins of the contracting parties, which they mixed with wine, and mutually drank †.

JULIUS CÆSAR sacrificed two young men to the gods in the Campus Martius; which cruel and infamous action was solemnly performed by the Roman priests ‡. The ancient Greeks were accustomed to flatter or appease their god SATURN by human sacrifices. The same horrid practice was usual among the Carthaginians, while their state subsisted; and DIONYSIUS tells us, that, in his time, the custom prevailed still among the Gauls and other nations in the west of Europe. But HERCULES is said to have abolished this inhuman rite, by substituting the figures and dress, instead of the persons, of the intended victims; and persuaded the people, that the offended gods would be equally pleased with the shadow as with the substance ||. This mode of sacrificing figures, instead of men, with a few exceptions, was long continued among the Romans §. PLINY relates **, that, in the year of Rome 657, when CN. CORNELIUS LEPIDUS and P. LICINIUS CRASSUS were consuls, a decree of the Senate passed, forbidding all human sacrifices for the future; a clear indication that this detestable rite was formerly not unfrequent in that great empire.

The

* Herodot. Melpomene, edit. Xyphilin, p. 241.

† Ibid. p. 243. § 70.

‡ Dio Cassius, lib. 43. p. 140. edit. Xyphilin.

§ Dionys. Halicarnass. edit. Sylburg. p. 30.

§ Id. ibid.

** Plin. lib. 30. c. 1.

The Druids, we are told by STRABO, instead of taking victims from the brute creation, sacrificed individuals of the human species. When a man was pitched upon for the purposes of divination, they stabbed him with a poinard ; and, from the various contortions and convulsive motions produced by extreme agony, the monsters called *priests*, pretended to predict future events *. He likewise informs us, that the Cimbri, after dissecting the bellies of their captives, from the appearance of the intestines, foretold victory or defeat †. TACITUS, in his Annals, says, that the Druids, on altars erected in groves, sacrificed Tribunes and Centurians of the first rank ‡. He adds, that they consulted the gods by the disposition of the fleshy fibres of human victims §. JULIUS CÆSAR, when describing the manners of the Gauls, remarks, that they were extremely religious ; that, when afflicted with grievous diseases, or other calamities, they either sacrificed human victims, or spontaneously devoted themselves to that terrible mode of extinguishing life. The Druids, or priests, superintended these sacrifices, which were performed with a view to expiate their crimes, and to appease the wrath of their gods. In their more public sacrifices of this kind, they employed immense images of men, composed of the branches of trees. These images were hollow within ; and the legs, thighs, trunk, and arms, were filled with men, women, and children, who were all burnt with faggots from below. This was the punishment of those who had been guilty of theft, or other crimes. But, when a sufficient number of criminals could not be obtained, recourse was had to those who were perfectly innocent §.

In

* Strab. lib. 4.

† Id. lib. 7. de Cimbris.

‡ Tacit. Annal. lib. 1.

§ Ibid. lib. 14. and de Moribus German.—See also Lucan. Pharsal. lib. 3

|| Jul. Cæs. Opera, edit. Samuel Clarke, S. T. fr. lib. 6. p. 131.

In Mexico, when that empire was discovered by the Spaniards, they had a complete system of religious opinions and practices, accompanied with all the usual train of priests, temples, victims, and festivals. But, of all offerings to their gods, human sacrifices they considered as the most acceptable. The captives taken in war were brought to the temple, devoted as victims to their divinities, and sacrificed with rites the most solemn and excruciating. The heart and head were consecrated to the gods; and the respective warriors who seized the prisoners carried off the bodies to *feast* upon them with their friends*. The same author, in another place, tells us, that the Spaniards landed on a small island, which they called the *Isle of Sacrifices*; because there, for the first time, they beheld the horrid spectacle of human victims†. Even among the Peruvians, who, of all the people found in America when first discovered, were the mildest and most humane in their general temper and manners, on certain emergencies, offered human sacrifices to their god. On the death of an Inca, or other person of rank, many of their attendants were killed, that they might appear in the other world with their usual retinue, and be served with the same respect as they had been in this. On the death of HUANA-CAPAC, the most powerful of their Monarchs, more than a thousand human victims accompanied him to the tomb‡. The same practice was observed by the natives of Florida, where the lives of the subject were at the absolute disposal of the Sovereign. When any of his subjects incurred his displeasure, they approached him with the most abject humility, and offered him their heads. Neither did this absolute dominion terminate with the death of the Sovereign. When that event happened, his favourite wives and domestics were sacrificed at his tomb, that he

might

* Robertson's History of America, and the authorities quoted by him, vol. 2. p. 302. &c.

† Ibid. vol. 1. p. 242.

‡ Ibid. vol. 2. p. 325.

might appear with his usual pomp in the next world, and, such was the absurd reverence in which he was held, that those victims met death with exultation, esteeming it as a mark of distinction, and a reward for their fidelity*.

I must here quote a few lines from Dr ROBERTSON'S History of America, as it strongly marks the character and manners of the Tlascalans, who strenuously opposed the Spaniards in their progress to Mexico. 'They gave the Spaniards warning,' says that elegant historian, 'of their hostile intentions; and, as they knew that they wanted provisions, and imagined, perhaps, like the other Americans, that they had left their own country because it did not afford them subsistence, they sent to their camp a large supply of poultry and maize, desiring them to eat plentifully, because they scorned to attack an enemy *enfeebled* by hunger, and it would be an *affront* to their *gods* to offer them *famished* victims, as well as disagreeable to themselves to *feed* on such *emaciated* prey†.' The Americans considered the Spaniards as superior beings. CORTES, their then leader, with a most impolitic cruelty, and a most diabolical ingratitude, seized fifty Tlascalans, who brought provisions to his camp, and, on the supposition that they were spies, cut off their hands. This horrible spectacle, joined to the terror excited by fire-arms and horses, gave dreadful impressions of their ferocity, as appears from their mode of addressing the Spaniards. 'If,' said they, 'you are *divinities* of a cruel and savage nature, we present to you *five slaves*, that you may *drink* their *blood*, and *eat* their *flesh*. If you are mild *deities*, accept an offer of incense and variegated plumes. If you are *men*, here is meat, and bread, and fruit to

VOL. II. T t ' nourish

* Robertson's History of America, and authorities, vol. 1. p. 344. 380.

† Ibid. vol. 2. p. 40.

'nourish you' *.' Cholula, a town of some extent in the empire of Mexico, was considered by the inhabitants of New Spain as the sanctuary and chief residence of their gods. To this town pilgrims resorted from all the provinces, and a greater number of *human victims* were offered in its principal temple than even in that of Mexico †.

When CORTES and his army had made themselves masters of part of the city of Mexico, they were almost totally overpowered by the numbers and the fierceness of their enemies. Beside those who were slain, forty Spaniards were taken prisoners. The Mexicans celebrated their victory with a horrid festival. The city was illuminated, and particularly their great temple. By means of the lights, the Spaniards distinguished their companions by the whiteness of their colour, when compelled to dance, naked before the image of the Mexican god, to whom they were about to be sacrificed. They heard distinctly the shrieks of those who were *sacrificed*, and thought they knew the voice of each unhappy *victim* ‡.

The Germans and Celts, after sacrificing *men* and dogs, suspended the dead bodies in the sacred groves, sprinkled their blood on the adjacent trees, on their idol, and on the spectators. They afterwards *feasted* on the *flesh* of the victims. ||. Among the same people, a god, either supreme, or of the highest order, was always honoured with the most important sacrifices, as that of an *only son* §.

Human

* Robertson's History of America, vol. 2. p. 42.

† Ibid. p. 47.

‡ Ibid. p. 119. 120.

|| Snorro Sturlesonius, in vita Haguini Adestani; and Keyser, Antiquitat. Septentrional. et Celtic. p. 326. 327.

§ Tacitus, Delphin. p. 121. &c.

Human sacrifices, even in the days of PLATO, were not unfrequent in almost every district of Greece *. The goddess DIANA was supposed to be incensed, because MELANIPPUS and COMETHO were married in her temple on the very night of a festival. The oracle, upon this momentous occasion, was consulted; and the response was, that, to appease her godship, a *boy*, and a *girl* of the greatest *beauty*, should be annually sacrificed †. To a statue of some barbarous divinity, said to have been brought from Taurica to Lacedæmon, the oracle commanded that *human sacrifices* should be offered. But LYCURGUS abolished this horrid rite ‡. PELOPIDAS, when his situation in war was critical, dreamed that the favour of the gods must be obtained by *sacrificing* a young *virgin*. Some of his generals insisted that the will of the gods should be implicitly obeyed. But others opposed the perpetration of a deed so shocking and unnatural. While, says PLUTARCH, the Chiefs were disputing upon this more than brutal subject, and PELOPIDAS himself was hesitating, a young *mare*, leaving her pasture, ran towards the camp. THEOCRITUS, the seer, instantly called out to PELOPIDAS: Behold the victim the gods have prepared for you, and they expect no other *virgin*! The mare, with the usual solemnities, was immediately sacrificed ||. It is impossible not to recollect the similarity of this event to that of ABRAHAM and his son ISAAC. A *mare* and a *ram* make no considerable variation in the two stories.

The Semnones, a people in the circle of Saxony in Germany, held their religious rites and public deliberations in sacred groves;

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and,

* Plato de Legib. lib. 6.; and Travels of Anacharsis, the younger, in Greece, vol. 2. p. 348. Transf.

† Pausan. lib. 7. cap. 16.

‡ Ibid. lib. 3. cap. 16.

|| Plutarch, vol. 2. edit. Bryan. p.

and, before they came to any determination of moment, they sacrificed a *man* to their gods *. PLUTARCH, on this subject, laughs at the Romans for reprehending the Barbarians, because the latter were addicted to human sacrifices, a detestable practice of which the former were not unfrequently guilty †.

We meet with a shocking instance of *human sacrifices* in the reign of AUGUSTUS. After L. ANTONIUS was obliged to surrender at Perugia, AUGUSTUS commanded no less than four hundred senators and Roman knights, who had taken part with ANTONY, to be sacrificed as *victims* at the altar of JULIUS CÆSAR ‡. The same fact is mentioned by SÜETONIUS, with this only exception, that he reduces the number of victims to three hundred ||.

Even in the days of PROCOPIUS, who was one of JUSTINIAN'S generals, the Gauls absurdly sacrificed *human victims* after the *Christian religion* was established in their country §; and DITMARUS tells us, that the Normans and Danes sacrificed annually *ninety-nine men*, along with a number of other animals **. TACITUS relates, that MERCURY was the chief god of the Germans, and that, on certain stated days, *human sacrifices* were offered up to him ††.

What,

* Tacit. de Moribus German. edit Delphin. tom. 4. p. 119.

† Plutarch. de Superstitione.

‡ Dio Cass. edit. Xiphilin. lib. 48. p. 225.

|| Suetonius in vit. Caesar. Octavian. August. § 14.

§ Procop. de Bello Goth. lib. 1.

** Ditmar. lib. 1.

†† Tacit. edit. Delphin. tom. 4. p. 29.

What, in the name of wonder, should have given rise to an institution so apparently contrary to every principle of human nature, and yet so universally diffused over the whole globe? That it originated from superstition is unquestionable. But that answer is too general. There must be a progress in superstition, as well as in every other acquired affection of the mind. Whenever men, (which must have been coeval with their existence), acquired ideas of superior powers, they ascribed to them human passions, and human frailties. If they imagined that, by any action, they had incurred the displeasure of a particular god, or powerful being, terror was the inevitable consequence. The next feeling was, how is this angry god to be appeased? It was not an unnatural thought, that such articles of provisions as were agreeable to themselves would not be unacceptable to their gods. They accordingly began with offerings of their choicest fruits. But, after a priesthood was established, it was soon discovered that such simple offerings were not sufficient. They taught the people, that the gods liked more substantial food. The animal tribes were the next objects of propitiation for sin. This new object was particularly agreeable to the priests, who in all ages were fond of good eating. They at first contented themselves with sacrificing and devouring the feathered tribes, such as turtle-doves, cocks, &c. This answered very well for some time; but still it was not enough. As the number of priests gradually increased, birds alone were not thought to be sufficient to support them. They, therefore, had recourse to the quadrupeds; because the sins of the land were still increasing, in proportion to the increase of population. Hence they proceeded to sacrifice lambs, kids, hogs, rams, and goats. Not satisfied still, the priests insisted that the people, in order to avert the vengeance of the gods, and procure pardon for their numerous and complicated iniquities, should feast them with heifers, bullocks, and

and oxen. These priests, it should appear, after tiring of birds and the smaller quadrupeds, like honest Englishmen, at last gave the preference to good roast-beef.

This sacrificial progression has not hitherto been unnatural. But the step from quadrupeds to the human species is very wide; yet there are many recorded instances, in almost all nations whose ancient history has come down to us, of this diabolical practice; and we have seen that it still exists in most of the islands of the Pacific Ocean which have been visited by our late navigators. Here the theory of feeding priests may seem to fail; but it must not be entirely relinquished. In the rude stages of society, Cannibals, or eaters of human flesh, have, at different periods, been diffused over the whole habitable globe. Superstition, or rather something more gross, must have given rise to an action so generally repugnant to human nature. The dreadful institution of murdering and roasting men, with a view to appease the wrath of the gods, was soon succeeded by eating their flesh. When this was perceived by rude and often starved barbarians, the priests, or superintendants of such detestable rites, preferred men to all other animals. This motive could not be held out to the people. To them a more powerful engine was exhibited. Upon particular emergencies, when their minds were in the highest agitations of terror, whether from real or superstitious causes, the poor deluded creatures were told, that the resentment and wrath of the gods were so great, that neither birds nor quadrupeds, nor any of the inferior animals, would be effectual to avert their vengeance. There was only one step farther. Instead of birds and quadrupeds, nothing less than individuals of the human species could appease these insatiable gods, the existence of whom was firmly believed by ignorant men, and strongly inculcated by wicked priests.

Pelew

Pelew or Palos Islanders.

WE now willingly abandon the shocking subjects of cannibals and human sacrifices, and shall proceed to give a more agreeable picture of man in a state not more enlightened by science than some of the various people which have already been cursorily described.

The Pelew or Palos islands are situated between the 5th and 9th degree of north latitude, and between the 130th and 136th degrees of east longitude from Greenwich, and seem never to have been visited by any European till Captain HENRY WILSON, of the *Antelope East India packet*, was wrecked on one of their shores in the year 1783. Captain WILSON and his ship's company, after this disastrous event, were apprehensive lest the natives should prove to be hostile. They, however, discovered, that this island, the name of which they afterwards learnt to be *Oroolong*, was without inhabitants, but surrounded with a group of other islands crowded with people. The day after the wreck, two canoes appeared, and were approaching to Oroolong. Every man immediately ran to his arms, which, with a quantity of powder and shot, had been saved, in order to repel any attack that might be made. These canoes came near the shore. Captain WILSON, and THOMAS ROSE, a native of Bengal, who understood the Malay and several other languages, addressed the people in the boats, one of whom spoke the Malay tongue. They asked, Who the *Antelope's* men were, and whether they were friends or foes? To this question THOMAS ROSE was directed to reply, That they were unfortunate Englishmen, who had lost their ship upon the reef; that they were friends, and had no inimical

inimical intentions ; but that they relied on such assistance from the natives as men in their calamitous situation required. They then came ashore ; and, as was natural, they looked around with a jealous eye, lest they should be surprised and injured. The courteous and affectionate manner with which Captain WILSON and the other gentlemen treated them, soon removed all their apprehensions.

The natives of these islands are of a deep copper colour, and go perfectly naked. They are of a middling stature, very erect and muscular ; their limbs are handsome ; and they have a peculiar majesty in their manner of walking. These people came from *Pelew*, the capital of a neighbouring island, governed, along with others, by ABBA THULLE, their King or Sovereign, to Oroolong. Their legs as well as thighs were so thickly *tattooed*, that their colour was much deeper than that of the rest of their bodies. They seemed to have never known or heard of white men ; and therefore considered the English as a very extraordinary race of beings. They were astonished to find that the English allowed hair to grow on their breasts, which they regarded as a mark of great indelicacy ; and, therefore, both sexes eradicate the hairs from every part of their bodies, except the head. At the first interview with King ABBA THULLE, Captain WILSON requested permission to build a vessel to convey himself and his unfortunate associates back to their own country ; a request to which the King most courteously assented, and promised every assistance in his power to render their distressful situation as comfortable as possible. This King, like his subjects, was perfectly naked, and, in his person, had not the smallest mark of distinction, except what arose from his good sense, humanity, and deportment. These innocent people were totally ignorant of fire-arms. Captain WILSON, in order to gratify their curiosity, ordered
all

all his men to be armed and drawn up on the beach. After going through some evolutions, they fired three volleys in presence of the King and his attendants, who expressed their surprise by hallowing, jumping, &c. One of the fowls, which had been saved from the wreck, was made to pass across the cove, where Mr BENDER was prepared with his fowling-piece loaded with small shot. He fired, and the bird instantly dropped, having one wing and one leg broken. Some of the natives took it up, and brought it to the King, who was astonished, as he had seen nothing pass out of the gun, how this effect could have been produced.

Some time after, Captain WILSON, and the whole ship's company were vexed, and even alarmed, on observing an unusual coolness in the aspect and behaviour of the King. Instead of his former open and affectionate manner, he had become morose and apparently distrustful. The cause of this change, however, when developed, was not only a confirmation of the highest honour in the breast of the Sovereign, but a proof of the greatest delicacy of sentiment. The King was at war with an island not far distant, called *Aringall*. He meant to make an attack upon that island in a few days. He wished to have the assistance of five Englishmen armed with muskets, pistols, &c. to astonish and annoy his enemies. Whenever Captain WILSON discovered the nature of the King's request, he instantly complied. In a moment, every countenance assumed an unusual gaiety, and perfect harmony and mutual confidence were restored. The five men, with THOMAS ROSE the interpreter, accompanied the fleet of King ABBA THULLE, which consisted of a hundred and fifty canoes filled with warriors. No sooner did they arrive within a proper distance of the enemy's fleet than the musketry were ordered to be fired. One or two men were observed to fall. Terror and

dismay, at an exhibition so far removed from the conception of those islanders, instantly seized them, and they fled with the utmost precipitation. The King, elevated by the victory he had so easily obtained, and the terror which he had excited in the minds of his enemies, returned in triumph to his own dominions, where he was received by his subjects with every mark of joy and exultation. Some little time afterwards, the King prepared his canoes and soldiers for another expedition against Artingall. Ten Englishmen, armed as before, with the addition of a swivel-gun, were solicited from Captain WILSON to attend *ABBA THULLE* and his warriors. This request was also granted; and the havock made by the fire-arms was so great, that another victory was easily obtained by the Monarch of Pelew. Soon after this defeat, peace was concluded between the two contending parties.

Marriage, among these people, seemed to be a civil contract, which they regard as inviolable. A plurality of wives was allowed, though the number seldom exceeded two. *RAA ROOK* had three wives, and the King five; but they did not live together. After a woman was pregnant, though she accompanied her husband, she never, while in that state, slept with him. When any Chief appeared with his two wives, they generally sat on each side of him; and the company paid no more attention to them than what is customary where the greatest good manners prevail. One of the English gentlemen, endeavouring to render himself agreeable to a lady by what is usually termed a marked assiduity, *ARRA ROOKER*, with much delicacy, hinted, that such behaviour was not altogether proper.

With regard to their mode of *burying* the dead, Mr SHARP the surgeon, and THOMAS HARVEY the boatswain, saw the funeral of

RAA

RAA Rook's son, who had fallen in battle. The body was wrapped in a mat, and carried on the shoulders of four men, on a machine made of bamboos, and resembling what is called a *horse* by our chairmen. Beside these four bearers, the funeral procession consisted entirely of women, who incessantly set up the loudest lamentations. The same custom formerly existed in the north of Scotland, and still prevails in some parts of the Highlands and western isles of that country.

• Captain WILSON and his ship's company, before their new vessel could be fitted for sea, remained three months in Oroolong, and occasionally visited several other of the Pelew Islands. During this period they could discover no marks of a public *religion* of any kind among these islanders: But they uniformly exhibited the greatest examples of *humanity* and *moral rectitude*, which ought to be the genuine characteristics of all religions, whatever diversity of ceremonials they may happen to assume. But, though these people have no place of *public* worship to which they resort, both their private and political virtues are so eminently conspicuous, that it is almost impossible they should not have some idea of a supreme and a benevolent Deity. The people of Pelew, however, discovered some portion of superstition; for, when King *ABBA THULLE* saw a particular species of *wood* employed in the construction of the new ship, he expressed a wish that this wood should be removed, as he considered it as a *bad omen*, or *unpropitious*. They had likewise a notion of an evil spirit, that often counteracted human affairs. When the second mate, Mr *BARKER*, fell backward from the side of the vessel then on the stocks, *RAA Rook*, who happened to be present, said, the accident was owing to the *unlucky wood*, which had been allowed to remain in the vessel, that the evil spirit had brought this misfortune upon Mr *BARKER*.

They seemed to have also a strong notion of divination. When about to undertake any affair of moment, by splitting the leaves of a plant similar to our bullrush, and measuring or twisting these strips upon their middle finger, they imagined they could discover whether the event would be prosperous or adverse. *Captain WILSON*, in conversation with *LEE BOO*, King *ABBA THULLE*'s second son, after his arrival in England with the Captain, told him, that the intention of saying prayers at church was in order to make men good, and that, when they died, and were buried, they might live again *above*, pointing to the sky; *LEE BOO*, with great eagerness, replied—*All same PELEW—Bad men stay in earth—good men go into sky—become very beautiful*, holding his hand in the air, and giving a fluttering motion with his fingers. This single circumstance indicates, in the most unequivocal terms, that these innocent people firmly believe the existence of the soul after the dissolution of the body, and have an idea of future rewards and punishments corresponding to the virtuous or vicious behaviour of individuals.

It is a singular circumstance in the history of these people, that, if an *attack* is intended against an *hostile* island, instead of surprising the enemy, intimation is uniformly given of the time when the assault is to be made. Though illustrious patterns of humanity, they put to *death* every *prisoner* taken in *war*. This seeming cruelty, however, must not be hastily condemned. It is not performed with the insulting solemnities of seemingly *legal trials*, like the execrable conduct of the present *French Convention*, which will for ever remain a most detestable and humiliating proof of the *barbarity* of what has, till now, been esteemed one of the most *civilized* nations in Europe. The Pelew Islanders, on the contrary, never kill their prisoners but instantly after a victory is obtained, before the effervescence of animosity

mosity is allayed ; and the poor victims are deprived of life by those who are either smarting under *personal* wounds, or who have lost some near *relation* in the combat.

It has formerly been related, that the inhabitants of the South Sea Islands are addicted to *petty thefts*. In the *Pelew* Islands instances of theft likewise occurred ; but this *crime*, if in them it merits that appellation, was always confined to the lower class of people. When a theft, however, was committed, the King and his Chiefs considered it as a gross breach of hospitality, made strict inquiries after the thief, whom they generally discovered, and restored the articles. ‘ Should ‘ some eastern prince,’ Captain WILSON humanely remarks, as an apology for the Pelewers, ‘ magnificently decorated, accidentally, as he ‘ passed along, drop a diamond from his robe, and were a poor peasant (knowing how great an acquisition it was), to see it sparkling ‘ in the dust, where is that resistance, that self-denial, which would ‘ go in and leave it untouched ?—A nail, a tool, or a bit of old iron, ‘ was to *them* the alluring diamond.’

We must not leave these amiable people, till a short sketch of the character and feelings of LEE BOO, who was brought from Pelew to England by Captain WILSON, shall be given. This young Prince was about twenty years of age when he arrived in a *New World*. His natural disposition was mild, affable, sprightly, and affectionate. He discovered, on all occasions, a keen spirit of investigating the causes or effects which to him were at first incomprehensible. After landing at Macao, he was conducted, along with his protectors and friends, to the house of Mr M‘INTYRE, and brought into a large hall, which was lighted with candles, a table being placed in the middle covered for supper, and a sideboard handsomely ornamented.

This

This new scene filled LEE BOO's mind with amazement. But the glass-vessels seemed principally to arrest his attention. He fixed his eye upon a large mirror, which nearly reflected his whole body. Here he stood some time lost in astonishment. He then laughed, drew back, and, absorbed in wonder, returned to view this strange appearance. He looked, as young children, when placed in the same circumstances, uniformly do, behind the mirror, to see if any person was there. As there were no quadrupeds in his country, except two dogs which had been left there by the English, the sheep, goats, and cattle he saw at Macao, were objects which struck his mind in the most forcible manner. One of the dogs left at Pelew was a Newfoundland, and his name was *Sailor*. LEE BOO, from this circumstance, denominated every quadruped he saw, whether small or great, *Sailor*. A horse was a *large sailor*, &c. Observing a man pass the house on horseback, he was so astonished, that he pressed every person in company to go and see so strange a phaenomenon.

When on his voyage to England in the *Morse* indiaman, Captain ELLIOT, he was very desirous of learning the name and the country of every ship that passed. As each inquiry was gratified, he made an additional *knot* on his *line*. These *knots* were to him the same as written memorandums to us. But, as the knots soon became numerous, to refresh his memory, he was obliged to read them over every day. The officers of the *Morse*, when they saw him studying his *line*, used to say he was *reading his journal*. He solicited Captain WILSON to be instructed in the use of letters and of reading, which was readily acquiesced in; and he was very attentive and alert in comprehending every species of information he received. On arriving at St Helena, he was much struck with the soldiers and cannon on the fortifications. When walking in the Company's garden, he

was pleased with some shady walks formed with bamboos arching overhead on lattice-work ; and remarked that his own countrymen were ignorant of many advantages they might easily obtain. Like a philosopher and patriot, every useful and extraordinary thing that occurred in his travels, he noted down in his manner, and with the uniform view of improving his countrymen when he should return to his native soil. The Morse arrived at Portsmouth on the 14th day of July 1784. When LEE BOO landed, the number and magnitude of war ships in the harbour, the variety and structure of the houses, and the ramparts, so rivetted and absorbed his mind, that he found himself unable to ask any questions. When he reached London from Portsmouth, he was conveyed to Captain WILSON's house at Rotherhithe. He arrived in his natural glow and youthful spirits. What he had remarked in silence, was now disclosed with vivacity and intelligence. He described the incidents of his journey, and said that it was very pleasant ; that he had been put into a little *house*, which was run away with by *horses* ; that he slept, but was still proceeding in his journey, and that, whilst he was moved one way, the *fields*, the *houses*, and the *trees*, went in the contrary direction. At the hour of rest, he was conducted to his chamber, where, for the first time, he saw a fourpost bed. Not knowing for what purpose it was intended, he repeatedly jumped in and out, and felt and pulled aside the curtains. At length, being acquainted with its use, he laid himself down to sleep, saying, that, in England, there was *a house for every thing*. Being asked his opinion of England and of his present situation, he instantly replied, *All fine country, fine street, fine coach, and house upon house up to sky*.

LEE BOO was sent to an academy, to be instructed in reading and writing. Whilst there, his manner and deportment soon gained him
the

the esteem of the master, and the affection of his young companions. In the hours of recess from school, he amused Captain WILSON's family with his vivacity and good humour. He mimicked such peculiarities as he observed in the manners and behaviour of his school-fellows, and often said, that, when he returned to *Pelew*, he would have a school of his own, and should be thought very wise *when he taught the great people their letters*. He always called Mr WILSON *Captain*; but he uniformly gave the appellation of *Mother* to Mrs WILSON, considering it as a greater mark of affection and respect. He was often told, that he should say *Mrs WILSON*; but his constant reply was, *No, no—Mother, Mother*. When solicited for charity by young people of either sex, he told them, that it was shameful to *beg* as long as they were able to *work*; but the solicitations of *old age* he could never resist, saying to himself, *LEE BOO must give poor old man—old man not able to work*. Captain WILSON and the young Prince, when dining with Mr KEATE, a friend of Mr WILSON, and well known to LEE BOO, a miniature picture of Mr KEATE was exhibited; LEE BOO, taking the picture into his hand, instantly recognized the likeness, and exclaimed, *Misser KEATE—very nice, very good*. Captain WILSON asked him, if he understood what it represented? He replied, *LEE BOO understand well—That Misser KEATE die—This Misser KEATE live!* A volume on the utility of portrait-painting could not contain more than these few forcible words uttered by this untutored child of Nature.

Every useful or uncommon object which he saw he examined with attention, and, like a true philosopher and patriot, considered whether it might be rendered useful to his own country. When in gardens, he remarked particularly the esculent plants and fruit-trees, asked many questions concerning them, and said that, when he returned
home,

home, he would carry seeds of such of them as he thought would grow to perfection in *Pelew*. While rapidly advancing in the knowledge of the English language, and in the art of writing, notwithstanding all the precautions of his friends, he was seized with the small-pox, of which he died in a few days. When very bad, he accidentally heard that Mrs WILSON was indisposed, and confined to bed, he became impatient, and exclaimed, *What, mother ill? LEE BOO go up to see her.* On the Thursday before his death, when walking across the room, he looked at himself in the glass. His face being then swelled and disfigured, he shook his head, turned away as if disgusted with his appearance, and said to Mr SHARP the surgeon, that *his father and mother much grieve, for they knew he was very sick.* Growing worse in the evening, he seemed to think himself in danger. He took Mr SHARP by the hand, and looking stedfastly on him, said, *Good friend, when you go to PELEW, tell ABBA THULLE that LEE BOO take much drink to make small-pox go away, but he die; that the Captain and mother very kind—all English very good men;—was much sorry he could not speak to the King the number of fine things the English had got.* Though his feelings and pain must have been acute, his spirit would not allow him to complain. Mrs WILSON's chamber being adjacent to his own, he often called out to know if she was better, always adding, lest she should suffer on his account, *LEE BOO do well, Mother.* Soon after his interment in Rotherhithe church-yard, the INDIA COMPANY ordered a tomb to be erected over his grave with the following inscription:

THE PHILOSOPHY

To the Memory
 Of Prince LEE BOO,
 A native of the PELEW, or PALOS Islands;
 And son to ABBA THULLE, Rupack or King
 Of the Island COOROORAA;
 Who departed this life on the 27th of December
 1784,
 Aged 20 years;
 This Stone is inscribed,
 By the Honourable United East India Company,
 As a Testimony of Esteem
 For the humane and kind Treatment afforded
 By his FATHER to the Crew of their ship
 The ANTELOPE, Captain WILSON,
 Which was wrecked off that Island
 In the night of the 9th of August 1783.

*Stop, Reader, stop!—let NATURE claim a tear—
 A Prince of MINE, LEE BOO, lies buried here.*

Upon the whole, no poet, either for character, situation, or incident, can have a better subject for a *Tragedy*, than is afforded by the *History of Prince LEE BOO* *.

THIS

* This short narrative concerning the Pelew islanders is extracted from *An Account of the Pelew Islands, composed from the Journals of Captain HENRY WILSON, and some of his officers, by the ingenious GEORGE KEATE, Esq; F. R. S. & S. A.*

THIS interesting Chapter must not be concluded without some general reflections. The reader has now been conducted through almost every region of the globe which has hitherto been visited by Europeans of intelligence. Though, in different climates, men vary in colour, appearance, and manners; yet the human character, however diversified, is not only recognizable, but perceived to be uniformly and distinctively the same. It is not by colour, nor even form, but by mental powers, that men rise superior to all other animated beings in this planet.

RELIGION.

IN every country, however remote from civilization, traces of RELIGION, or of *superstition*, are discernible. The forms, the objects, and even the effects of religion, according to circumstances and situations, assume different aspects; but the sentiments excited are nearly similar. The savage who starves and shivers in a dreary frozen region, though he believes the existence of superior beings, naturally regards them as cruel and unpropitious. But, in climates of which the genial warmth multiplies and matures the productions of Nature, the ideas of the characters of gods and goddesses become more mild and benign. Men, placed in circumstances so highly favourable to happiness, feel gratitude to the Author or Authors of the numberless comforts they daily enjoy. Furnished with food in abundance, and having perpetually before their eyes the most delightful scenery, they possess an hilarity of spirit, which makes them ever gay and vivacious. Gloomy ideas, and dreadful apprehensions of futurity, are banished from their thoughts. Still, however, death,

the many physical evils of life, and fortuitous calamities produced by the elements, by earthquakes, and by occasional inundations, alarm their minds; and excite the idea of *bad* as well as of *good* DEITIES. These notions of *good* and of *bad* spirits, who superintended all human affairs at certain periods of society, were universal in all religions of the ancient states of which we have any historical knowledge. Greece and Rome were formerly overwhelmed with deluges of gods and goddesses, both superior and infernal. Hills, mountains, rivers, springs, the earth, the sea, the sun, moon, and constellations, were all held sacred, or considered as so many separate deities, to whom distinct offices were assigned, and particular rites and sacrifices performed at their respective shrines. Though men, by moral doctrines far more sublime, and more consonant to reason, were long ago favoured with the genuine principles of Theism, or of the existence of One great CREATOR and Governour of the universe; yet many of the ancient superstitions, absurd notions and practices, still subsist in several populous nations of Europe, Asia, &c.

At a very early period of Christianity, a Priesthood, or ecclesiastical Hierarchy, was established. The simplicity, the purity, and the universal benevolence of the Christian system, could not be suddenly embraced by men who had long been habituated to the pompous impressions and exhibitions of Paganism, which had been rivetted in their minds. The early teachers of Christianity perceived this alarming obstacle to the propagation of the Gospel. To remove this obstacle, however, and to accommodate matters, these teachers, with, it must be supposed, the most zealous and upright intentions, adopted a number of heathen ideas and practices, and incorporated them with the faith of what was emphatically denominated the *Catholic Church*. The leaders and
pastors

pastors of this Church perceived the advantages they might derive from this motely jumble of Christianity and Paganism. Between these two inconsistent, and naturally opposite systems of religion, the minds of men were confounded and intimidated. The power of the POPE, who was regarded not only as the head of the church, but as the *Vicar* or *representative* of CHRIST upon earth, soon increased to such an enormous degree, that, not the people only, but every Monarch in Europe, trembled at his *anathemas*, and ventured not to take any important step, even in political affairs, without the approbation of his *Holiness*! But the ambition of the POPE, and of his numerous tribes and orders of rapacious Priests, had no bounds. Not Kings and Princes alone, but the poorest private families, were laid under monstrous contributions, to pamper the *stomachs*, and minister to the *lusts* of these *holy locusts*, the most destructive and insatiable of all *vermin*. The arts employed to promote these *diabolical*, falsely called *religious* purposes, were various, and sometimes ingenious. The raptures of *heaven*, and the torments of *hell*, were depicted in the highest colourings which imagination could invent, or terror suggest. To procure the one, and to avoid the other, *money*, *goods*, or *vituals*, were the necessary articles of exchange. Those mental tyrants, to complete their system of delusion and of depredation, sealed up every source of information from the people, but what they chose to impart in artful and disguised forms. Factitious miracles were presented to the vulgar and believing eye. *Absolutions* for actual *crimes*, and *dispensations* from ceremonies and rules of the church, were *sold*. A *purgatory*, or state of temporary punishments to *souls* that were either to be eternally *damned* or *saved*, according to the *sums* paid for the prayers of mercenary, and generally ignorant and subaltern priests, was invented. In a word, a thousand tricks and impositions were employed to augment the power and riches

riches of the church. The *POPE* became the greatest Emperor that ever reigned on earth ; for his dominion was not only territorial but mental. This inhuman and fordid despotism continued for many centuries, and so clouded the minds of men with ignorance, superstition, and timidity, that their natural powers were totally blunted. This period of *Papal* sovereignty was afterwards, with much propriety, denominated the *dark ages* ; for, whenever a spark of genius burst through the universal gloom, it was instantly extinguished by the authority of the church.

The spirits of men may, for a time, be depressed and debased by religious and political bugbears ; but, from the history of human society, we learn, that this humiliating and lamentable condition of mankind cannot always subsist. Some bold and enlightened minds start up, assume their native rights, and, by their instruction and example, gradually loosen the chains of bigotry and oppression. This happy revolution took place, though later than might have been expected, in the western and northern parts of Europe. Amidst the threatenings of *bulls*, amidst *proscriptions*, *murders*, and *massacres*, daily inroads were made upon the rapacious despotism of the *POPE* and his abhorrent assistants. Men of knowledge, and of generous and ardent minds, arose. The art of *printing*, which enabled them to diffuse light and learning, was invented. The people saw with astonishment the ignorance and thralldom under which they had been enslaved. They spurned at spiritual tyranny, and with indignation threw off its yoke. A reformation in religious opinions and in church-government was established upon more rational principles. Since that glorious period, which does honour to human nature, the influence of this preposterous and infernal species of religion has gradually

gradually declined, and, by some late events, is now nearly annihilated; and, it is to be hoped, that nothing similar will ever again insult and disgrace the characters of rational beings.

W A R.

BESIDE Religion, human nature is stamped with another universal character. *Hostilities* were coeval with the existence of man, and still continue to deluge the earth with blood. Avarice, resentment, ambition, competition of interests, real or imaginary, are enumerated among the causes of *war*. But what, in the name of wonder, can be the *final* cause of cruelty, slaughter, and devastation? War, it has been said, gives rise to fortitude, vigilance, and other active powers of the mind. But, are there not a thousand motives capable of exciting and calling forth these powers, without being attended by such horrible effects? As an apology, it has been alleged, that, were it not for the intervention of war, men would increase to such a degree that the earth could not afford them sustenance. This attempt toward a solution of the difficulty is founded on ignorance or inattention. There is not a country in the habitable parts of the world which, with proper industry and culture, is not much more than sufficient to maintain the animals to which it gives birth. This final cause of war must, therefore, be relinquished till such an event, which is impossible, takes place. Nature has provided many effectual checks to a superabundant population. One half of the human race perish before they arrive at their seventh year. Those who surpass this period of existence are hourly cut off by innumerable diseases and accidents. Few, very few, reach what is called *old age*, or fourscore years.

Where,

What, then, is the necessity which forces men to *exterminate* one another from the face of the earth? The *passions* were bestowed upon us for the *wisest* purposes; but we too often give to these passions a direction contrary to the original intentions of Nature. But why should we be both *willing* and *able* to *pervert* the benevolent purposes of Nature? I will proceed no farther. The subject, though curious, is inextricable: I shall therefore dismiss it, by lamenting that state of human nature which, even in the present *luminous* condition of Europe, is still producing the most horrible, the most shocking examples of *madness* and *cruelty*! *.

POSTSCRIPT.

* Consider Europe at the moment I write—*Quem Deus vult perdere prius dementat.*

POSTSCRIPT.

COMMODORE BYRON, in his Voyage round the World *, mentions the following circumstances concerning the Patagonians he saw while he was in the Straits of Magellan. When he came to an anchor in the Straits, he observed a number of horsemen riding backward and forward, and waving some white substance as an invitation to come on shore; upon which he ordered out a twelve-oared boat, and made toward the beach. When Captain BYRON and his attendants came within a small distance from the shore, they saw about five hundred people, some on foot, but the greater part on horseback. No weapons were perceived among them. Signs, however, were made, that they should retire a little from the shore, and they immediately complied. He drew up his people, with proper officers at their head, upon the shore, and gave orders that none of them should quit their stations till he should call or beckon to them. He then approached alone toward the Indians; but, as they always retired, he made signs that one of them should come near. One of their number accordingly came. ‘ He was,’ says Mr BYRON, ‘ of a gigantic stature, and seemed to realize the tales of monsters in a human shape. He had the skin of some wild beast thrown over his shoulders, as a Scotch Highlander wears his plaid, and was painted so as to make the most hideous appearance I ever beheld. Round one eye was a large circle of white; a circle of black surrounded the other; and the rest of his face was streaked with paint of different colours. I did not measure him; but, if I may judge of his height by the proportion of his stature to my own, it could not be much less than seven feet. When this frightful Colossus

Vol. II.

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‘ came

* Hawkesworth's edit. vol. 1. p. 27. *et seqq.*

‘came up, we muttered somewhat to each other as a salutation; and I then walked with him towards his companions, to whom, as I advanced, I made signs that they should sit down; and they all readily complied. There were among them many women, who seemed to be proportionally large; and few of the men were less than the chief who had come forward to meet me.—They were all painted and clothed nearly in the same manner.—Their teeth were as white as ivory.—Except the skins, which they wore with the hair inwards, most of them were naked, a few only having upon their legs a kind of boot, with a short pointed stick fastened to each heel, which served as a spur. Having looked round upon these enormous goblins with no small astonishment, and with some difficulty made those that were still galloping up sit down with the rest, I took out a quantity of yellow and white beads, which I distributed among them, and which they received with very strong expressions of pleasure.’ Commodore BYRON distributed other trinkets among them, such as ribbons, &c. ‘Their peaceable and orderly behaviour on this occasion,’ our author remarks, ‘certainly did them honour, especially as my presents did not extend to the whole company. Neither impatience to share the new finery, nor curiosity to gain a nearer view of me and what I was doing, brought any one of them from the station that I had allotted him.’

Captain WALLIS * informs us, that he measured some of the Patagonians who appeared to be the tallest; that one of them was six feet seven inches high; that some of them were six feet six, and others six feet five inches; but that the stature of most of them was from five feet ten to six feet. Their complexion, like that of the North

North American Indians, is of a dark copper colour. Their hair is straight, and nearly as hard as the bristles of hogs. They are well made, robust, and strong; but their hands and feet are remarkably small. They are clothed with the skins of the guanico, an animal which, in size, figure, and colour, resembles a deer; but there is a bunch on its back, and it has no horns. It was remarked, that some of the men had a red circle painted round the left eye, and that others had their arms and different parts of their faces painted. The eye-lids of all the young women were painted black. They talked much; but, when spoken to in Spanish, Portuguese, and Dutch, they made no reply. Of their language we were equally ignorant. They had a singular kind of missile weapon. It was composed of two round stones, covered with leather, each about a pound weight, and were fastened to each end of a string about eight feet long. This weapon they use as a sling, one of the stones being kept in the hand, and the other is whirled round the head, till it has acquired sufficient velocity, and is then discharged at the object. So dexterous are they in the management of this double-headed shot, that, at the distance of fifteen yards, they can hit a mark not larger than a shilling. In hunting the guanico or the ostrich, however, they discharge these weapons in such a manner, that the cord entangles the legs of the animals, who then become an easy prey.

‘ After I had spent about four hours with these people, I made signs
 ‘ to them that I was going on board, and that I would take some of
 ‘ them with me, if they were desirous to go. As soon as I had
 ‘ made myself understood, above an hundred eagerly offered to visit
 ‘ the ship; but I did not chuse to indulge more than eight of the
 ‘ number. They jumped into the boats with the joy and alacrity
 ‘ of children going to a fair, and, having no intention of mischief

‘ against us, had not the least suspicion that we intended any mischief
‘ against them. They sung several of their country songs while
‘ they were in the boat; and, when they came on board, did not
‘ express either the curiosity or wonder which the multiplicity of
‘ objects, to them equally strange and stupendous, that at once pre-
‘ sented themselves, might be supposed to excite. I took them
‘ down into the cabin, where they looked about them with an un-
‘ accountable indifference, till one of them happened to cast his eyes
‘ upon a looking-glass, which afforded them infinite diversion. They
‘ advanced, retreated, and played a thousand tricks before it, laugh-
‘ ing violently, and talking with great emphasis to each other.—
‘ They eat indiscriminately whatever was offered to them; but they
‘ would drink nothing but water. From the cabin I carried them
‘ all over the ship; but they looked at nothing with much attention,
‘ except the animals which we had on board for live stock. They
‘ examined the hogs and sheep with some curiosity, and were ex-
‘ ceedingly delighted with the Guinea hens and turkeys. They did
‘ not seem to desire any thing they saw, except our apparel; and
‘ one of them, an old man, asked for that. We gratified him with
‘ a pair of shoes and buckles; and to each of the others I gave some
‘ trinkets.—I showed them the great guns; but they did not appear
‘ to have any notion of their use. After I had carried them through
‘ the ship, I ordered the marines to be drawn up, and go through
‘ part of their exercise. When the first volley was fired, they were
‘ struck with astonishment and terror. The old man, in particular,
‘ threw himself down upon the deck, pointed to the muskets, and
‘ then, striking his breast with his hand, lay some time motionless,
‘ with his eyes shut. By this we supposed he intended to show us,
‘ that he was not unacquainted with fire-arms, and their fatal effect.
‘ The rest, seeing our people merry, and finding themselves unhurt,
‘ soon

‘ soon resumed their cheerfulness and good humour, and heard the
‘ second and third volley fired without much emotion; but the old
‘ man continued prostrate upon the deck for some time, and never
‘ recovered his spirits till the firing was over. When the boat put
‘ off with them, they all began to sing, and continued their merri-
‘ ment till they got on shore *.’

Nootka Bay—Prince William’s Sound.

THE inhabitants are generally of a short stature, and square-made. The faces, both of men and women, are flat and round, with high cheek-bones, and flattish noses. Their teeth are white; their eyes dark, and quick-sighted. Their complexions are whiter than those of the southern Indians; and some of the women have rosy-coloured cheeks. Their hair is black, straight, and long; and, on the death of a friend, as a mark of mourning, they cut it short. The legs of the men are, in general, ill shaped, which Captain PORTLOCK attributes to their sitting perpetually in the same position in their canoes. They are as fond of what they esteem personal ornaments; for they paint their faces and hands, bore their ears and noses, and slit their under-lips. In the holes made in their noses, they hang ornaments of bone or of ivory, which are often two or three inches long. At the ears they generally wear beads, which hang down to the shoulders; and, in the slit in the lip, they place a bone or ivory instrument with holes in it, from which they suspend beads that reach as low as the chin. These holes in the lip disfigure them greatly; for some of them are as large as their mouths. With all this fancied finery, however, in their persons they are extremely filthy, and over-

run

* Captain Wallis’s Voyage round the World, Hawkesworth, vol. 1. p. 375. &c.

run with vermin. Their clothing consists entirely of the skins of quadrupeds and of birds. In general, they are a friendly people; and remarkably affectionate to their wives and children. But your attention to their women must be carried no farther than giving them presents; for nothing irritates them so much as taking improper liberties with their females. Like all other Indians, they have a strong propensity to stealing, not only from strangers, but from one another. ‘In the course of my trading with them,’ says PORTLOCK, ‘I have frequently seen them steal from one another; and, on being detected, they will give up the articles they have stolen with a laugh, and immediately appear as unconcerned as if nothing had happened amiss. I am sure, that with them thieving is rather thought a grace than a disgrace; and the complete thief is a clever fellow, but the burgling pilferer is less admired.—During our intercourse with them, they grew less addicted to thieving, in consequence of my sometimes appearing a little angry with them, and taking some pains to convince them of the impropriety of their behaviour. Upon the whole, they appear a good kind of people; and I am convinced, in a little time, provided a settlement of sufficient strength were established, would be an industrious set of people, in hunting and procuring the sea-otter and other skins for sale to the settlers *.’

Both men and women esteem long hair as an ornament. When a relation dies, they cut their hair pretty short, a general mark of mourning among all these Indian tribes. Polygamy seems not to be practised here; ‘as I never observed,’ PORTLOCK remarks, ‘any one of them to have more than one woman, whom he seemed to consider as his wife, to whom they pay very strict attention, and
‘ treat

* Portlock’s Voyage round the World, from the year 1785 to 1788, p. 249. &c.

'treat with a great deal of tenderness. You cannot affront them
 'more than by attempting to make advances to their wives. They
 'are likewise very fond of, and remarkably affectionate to, their
 'children. It is not the custom with those people, as with the
 'South Sea Islanders, for the men and women to eat separately; nor
 'are the women confined to eat meats of a particular description;
 'but for men, women, and children, to sit down indiscriminately at
 'their meals, which chiefly consist of fish of different kinds.—
 'Their persons are, in general, much about the size of Europeans.
 'The men have a very fierce and savage aspect, which, with their
 'dress, gives them much the appearance of warriors. Their wea-
 'pons of war are daggers and long pointed spears. They are very
 'easily irritated, and would make very little scruple to kill you
 'when they think themselves injured. More than once I had near-
 'ly experienced that fate, from some trifling disagreements in trade.
 'But, being pretty well acquainted with their tempers, I guarded as
 'much against them as possible; and, on all occasions, took care to
 'be well provided for them, in case of an attempt, by keeping my
 'pistols ready-charged before me *.'

Captain PORTLOCK likewise informs us, that their women, if
 kept clean, instead of being perpetually covered with filth and nasti-
 ness, would be very agreeable. In general, their features are pleasant,
 and their behaviour modest.

'The inestimable value of the American furs,' Captain PORT-
 LOCK remarks, 'will ever make it a desirable trade, and, whenever'
 'it is established upon a proper foundation, and a settlement made,
 'will become a very valuable and lucrative branch of commerce.

'It

* Portlock's Voyage, p. 290. &c.

‘ It would be an easy matter for either Government or our East
‘ India Company to make a settlement of this kind ; and the thin-
‘ nefs of the inhabitants will make it a matter of easy practicability ;
‘ and, as the Company are under the necessity of paying the Chinese
‘ in cash for their teas, I look upon it a settlement on this coast
‘ might be effected at a very inconsiderable expence, which would
‘ more than pay them for every article that is brought from China.’

CHAP.

CHAPTER V.

Of Sleep and Dreaming.

S E C T. I.

Of the Nature and efficient Causes of Sleep and Dreaming—Dreams characteristic of the Dreamer—Instead of a Diary, a Nocturnal would more effectually unfold the real Dispositions of Men—Specimen of a Nocturnal—Utility of Dreaming—Dreams not peculiar to Man.

AMONGST the various powers and operations of the human mind, none make a more capital figure than that of the *imagination*. To this faculty we are principally indebted for that great variety of pleasure and amusement which make life agreeable, and reconcile us to the many pains and difficulties incident to our species. By imagination, as far as relates to the present subject, is meant, that operation of the mind which recalls past ideas, or separates and combines ideas in a manner so lively, that the objects they represent seem to have a real existence, and affect us accordingly.

This definition of imagination, though by no means complete, is sufficient for my present purpose. Every man *dreams* more or less. As far as I can learn, this subject has never been treated of in a rational or philosophical manner*.

Sleep is the principal, though not the only source of dreams. I shall, therefore, make a few observations on that state of our existence which is so fertile in producing the phenomenon under consideration.

Man, while awake, is a very passive animal. Independently of his own inclination, his eyes and ears are constantly receiving impressions from a multiplicity of external objects. He is likewise stimulated by his other senses and bodily powers. His stomach must be alternately filled and emptied. The spring of his nerves and muscles necessarily impels him to motion. The pain of inactivity itself is sufficient to spur him on to action. But, no organ of the body, no faculty of the mind, can admit of long-continued action, without lassitude or a disposition to rest.

During sleep, our organs are no longer subject to receive impressions passively from external objects; the elasticity of the nerves and muscles is greatly relaxed; but the imagination, instead of being blunted, is whetted, and rendered more active. To give free scope to the imagination, it seems necessary that all communication with external objects should be entirely cut off. Having cursorily mentioned the principal circumstances and situations favourable to sleep and dreaming, we shall next inquire whether any analogous circumstances

* The substance of this chapter was read before the *Newtonian Society* of Edinburgh in the year 1764.

stances and situations exist when our senses and other powers are awake.

The great variety of characters, tempers, and peculiar biases exhibited in human nature, renders it difficult to select any general turn of mind as a proper example for illustrating this subject. These differences, however, are not confined to men when awake. . . Dreams, on the contrary, are as characteristic of the genius or dispositions of any individual as his waking thoughts. A man whose ordinary train of thinking is quick and lively, will never find the quickness or vivacity of his perceptions retarded or blunted by sleep. For elucidating this point, I shall make choice of a person who is naturally inclined to indulge reveries. Let us see how a person of this description is affected by the common occurrences of life. We shall first suppose him walking along the streets of a populous city. Numbers of objects present themselves on every hand, and solicit his attention. Among others, the rapid motion and noise of a coach oblige him to fly suddenly to a side, in order to escape from danger. His fortunate escape at first gives him pleasure. But, upon reflection, he cannot refrain from representing to himself, by means of the imagination, how miserably he should have been bruised, had he been less swift in his movements. This thought continues to torment him, till it is banished by some other idea which claims a superior attention. Let us next view him in a solitary walk. Here, if his mind be perfectly calm, he indulges his fancy with some fictitious scene, in which, by a natural propensity, himself is always the hero. Whether this scene be of a gay or distressful kind; whether the situation of his imaginary affairs demands courage, compassion, generosity, or gratitude, he not only feels the sentiments which these virtues inspire, but his actions uniformly correspond with his sentiments.

ments. Visionary scenes of this kind are not always of a transitory nature. When the situation of the place, and the present disposition of the mind, are favourable, a person often indulges that disposition till he performs a complete drama.

We shall now suppose our man of sensibility to be placed on the top of a precipice, or on the brink of a deep pit. In these situations, his mind is swifter than his eyes; for he is generally down himself before he gets a sight of the bottom. Some people are so much under the influence of imagination, that they have been observed to approach the mouth of a pit with cautious steps, and, as soon as they have looked down a few yards, fly back with horror, till they get far beyond the possibility of danger. Nay, so powerful is the imagination, and so prone to verify its ideas, that, were it counter-balanced by no other principle, a man would throw himself headlong from a precipice, merely to gratify his present feelings. Farther, when a person shuts his eyes, or rather when he is in an apartment without light; if, at the same time, he be alone, and his mind not ruffled or occupied by any painful ideas, then Fancy lays fast hold of him, and turns his attention to such objects as she pleases to represent.

Not to multiply particular situations which are favourable to the operations of imagination, I shall only add another instance on account of its singularity.

Fevers, and several other distempers, by some unaccountable influence of the body upon the mind, almost totally deprive us of our reasoning powers, and pervert our senses to such a degree, that we either mistake common objects, or they make little or no impression upon us. But, though these distempers deprive us of judicious reflection,

fection, and of regular impressions from the senses; yet the train of our perceptions, which is the food of the imagination, instead of being interrupted, proceeds with the greater rapidity. I shall not attempt to assign reasons why particular affections of the body impair or destroy the act of reasoning or reflecting: I shall only remark, that the ordinary train of our perceptions is, in some measure, a mere involuntary progression of ideas. But reasoning is a very complex operation, and cannot be performed without the united efforts of most of the whole powers of the mind. Considering, then, the intimate connection between our mental and corporeal faculties, is it not extremely natural, that indispositions of derangements of the body should more readily deprive us of a power whose operations are complex and difficult, than of that faculty the exertions of which are not only involuntary, but often act in direct opposition both to reason and inclination.

From the above analysis, the following remarks are naturally suggested: 1st, That the imagination, when not restrained by judgment, or checked by impressions from external objects, uniformly endeavours to complete any scene or set of ideas which happens to arise either from the ordinary train of perceptions, or from any striking impression received by the senses; and, 2^d, That circumstances or situations which tend to weaken our reasoning or reflective powers, or to prevent the impressions of external objects, give additional force and activity to the imagination.

These observations shall now be applied to *dreaming*. When a person is just about to fall asleep, he feels a struggle between reason and imagination. The former grows gradually weaker and weaker, while the vigour and activity of the latter continually increase till it completely

S E C T. II.

Of the final Causes of Dreaming.

THAT music, sprightly conversation, and, in general, every exercise that falls under the denomination of *amusement*, recreates the mind more effectually than mere inactivity, is a fact which admits of no controversy. Sleep, in one sense, is nothing more than a total suspension from action. But this inactivity is not, of itself, sufficient for repairing that lassitude of organs and waste of spirits, which are the never failing offspring of vigilance and exercise. The all-wise Author of our existence foresaw this defect, and hath accordingly provided the proper remedy. When asleep, the body, it is true, is inactive ; but the imagination is vigorous : And, I may, from experience, venture to affirm, that the imagination uniformly conducts us to scenes that are of a gay, serene, and amusing nature, unless the mind is soured by causes which excite disagreeable ideas, unless the body is struggling with disease or the seeds of disease, unless our characters and dispositions are tinctured with malice, or haunted with remorse. The gay and entertaining scenes presented by the imagination during sleep are much better adapted for recreating and invigorating our faculties than mere insensibility.

But this final cause of dreaming, however obvious, may appear liable to an objection. If this reasoning be just, how does it happen, it may be said, that disagreeable dreams are so frequent? This objection, however, instead of injuring the former, suggests another excellent final cause.

So delicate is the constitution of man, that, beside the many dangerous distempers to which he is constantly exposed, there is a great variety of little uneasinesses, which, though not so alarming as to call forth the sympathy of friends, are nevertheless capable of impairing the happiness, and fretting the lives of individuals. There are some disorders which almost elude our feelings, but, if not timely remedied, would probably cut off our existence in a few moments. It is during sleep that we are most liable to these secret disorders. But, as shall immediately be shown, the effects these disorders might produce are amply provided against by Nature. The chief causes of disagreeable dreams may be reduced to two: 1. When a person is actually labouring under a distemper, or happens to lie in a posture which disturbs some of the animal functions. 2. When any painful idea occurs in the ordinary train of perceptions. The first cause arises from morbid derangements in the corporeal organs, which, by a benevolent and salutary institution of Nature, communicate painful and horrid ideas to the mind. The only difference between these alarming ideas, and those which we feel in similar circumstances while awake, is this: In the former, although our ideas excite the same species of feelings; yet these feelings are generally referred to some wrong cause. This common misapprehension of the particular part really effected is, however, productive of no bad consequences: A furious engagement with the devil, an interview with the ghost of a departed friend; or, in general, some horrible scene generally comes
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to our aid, and gives such a brisk shock to the constitution as seldom fails, in cases, at least, where a longer continuance in sleep would be hurtful, to rouse us into reason and safety. Being thus suddenly awaked, the cause of our disagreeable dream, whether it derives its origin from a hurtful position of the body, or any irregularity in the motions of the fluids, is now not only clearly perceived, but instantaneously removed. Persons, therefore, who are so unfortunate as frequently to stand in need of disagreeable dreams, instead of complaining of the pain and horror they occasion, ought to regard them as kindly messengers sent to relieve them from a disease, of which they would be totally ignorant, but which, without their friendly interposition, would probably have put a final period to his existence.

The second cause of disagreeable dreams is derived from the particular temper or disposition of the dreamer's mind previous to sleep, or to painful ideas accidentally occurring in the ordinary train of perceptions. Here it is worthy of remark, that, during sleep, our ideas of pleasure and pain are greatly augmented. Pain, in particular, commonly rises to such an excruciating degree, that it rouses us from sleep entirely. Every man, at some time or other, has had an imaginary fall from a great height. But I doubt much if any person ever arrived at the bottom. He feels himself moving in the air; he even reflects on the terrible effects which must result from this fall. But, before that horrid catastrophe happens, he never fails to awake. It is impossible to determine what the consequences would be, were the imagination allowed to complete ideas of this destructive nature. The effects they produce, even without being completed, are very violent. Alarmed with terror, the motions of the fluids are increased to a hurtful degree; cold sweats are produced; the ears tingle; and great confusion is perceived in the brain. Now, if the

imagination were allowed to complete such ideas, these noxious effects would at least be greatly augmented ; their number too would be increased ; and it is difficult to determine, whether a person who falls from a precipice in imagination would not undergo the same fate as he who does so in reality. Men who have the misfortune to be subject to disagreeable dreams, learn by experience to know that they are *dreaming*. When terrified with impending danger, and even death, I have often said to myself, ‘ Don’t be so much alarmed : You have been in the same or in similar situations, which were uniformly discovered to be *dreams*.’ This species of dormitory reasoning greatly alleviates the pain, and not unfrequently gives an opposite direction to the imagination.

Another final cause must not be omitted. It would be improper, however, to confine this cause solely to such dreams as are occasioned by sleep ; because it is fully as conspicuous, and perhaps more useful, in those exertions of imagination, which are incidentally indulged when our senses are in a state of vigilance and activity. It has been remarked above, that the imagination, in situations favourable to its operations, uniformly leads us into scenes of action which give rise to the exercise of the respectable and benevolent virtues. We have all, at one time or another, supposed ourselves possessed of a great fortune. When indulging this speculation, we never fail to imagine, that we would behave with the utmost condescension to our inferiors ; that we would cherish and reward the virtuous, patronise the learned, support the indigent ; and, in a word, that we would exercise the most unbounded generosity and beneficence. Upon a cursory view of this subject, some people are apt to think, that a propensity to indulge reveries of this nature has its foundation in vanity, and are inclined, from that consideration, to curb and restrain it as vain and presumptuous,

presumptuous, or, at best, as a frivolous mode of employing our thoughts. It merits attention, however, that nature never gives an original propensity to the mind, but with a view to produce some beneficial purpose. But it will appear, from the following considerations, that the propensity to indulge fancied situations, and the particular conduct prompted by these situations, is wisely calculated to strengthen and promote the virtue of individuals.

Although we should never actually be possessed of the supposed great fortune; although these imaginary scenes should never happen; yet, so various are the incidents and situations which may fall out in the course of any man's life, that situations and incidents, if not precisely the same with those he may have figured in his imagination, at least resembling them in their principal circumstances, will undoubtedly occur. Now, when any circumstances in life demands the exertions of benevolence, compassion, courage, fortitude, or resignation, will not we be better prepared to act with dignity and propriety, than if these circumstances had occurred before we had any previous intimation from our feelings how our conduct ought to be directed on such interesting occasions? Hence the indulgence of aerial, though possible scenes of action, has an evident tendency to strengthen our virtue, to enlarge our experience, to improve the vivacity of our pleasurable feelings. Of course, instead of checking, it is our duty to encourage the reveries of fancy, provided her calls are not so frequent as to interrupt pursuits of a more important nature.

S E C T. III.

Every Person may derive Advantage from Dreams.

TO know one's self is the most important of all knowledge, and, at the same time, the most difficult to attain. Mankind are so artful in disguising the real motives of their actions, so ingenious in deceiving themselves, so averse to the discovery of vice or imperfection in their sentiments or behaviour, so keenly engaged in the occupations of life, and so prone to contrast themselves with the most profligate of the species, that they generally rest satisfied with their condition, and seldom inquire with any degree of impartiality into the real character or temperature of their minds. A more simple method of acquiring a knowledge of ourselves must be acceptable to every person who thinks himself interested in the inquiry. This end, I presume, may be accomplished by a moderate attention to our dreams. *Dreaming* must here be understood in the most common acceptation of the word ; for an inquiry into the natural tendency of imagination while awake, would engage us in a struggle with all the obstructions to self-knowledge formerly suggested. Let us, then, attend to those particular vices which we are most inclined to indulge in sleep. That vice which is most frequently and most luxuriously indulged in our dreams, may safely be esteemed our predominant passion. Though motives.

motives of interest, decency, and the opinions of our friends, may have restrained us from actual gratification, and created a delusive belief that we are no longer subject to its sollicitations ; yet, if the imaginary gratification constitutes an agreeable dream ; if it is then indulged without check or remorse, we may freely conclude, that we still remain its humble votaries, and that those motives which deter from actual indulgence are not the genuine motives which virtue inspires.

This method of discovering our real characters, it may be said, is more uncertain, and attended with greater difficulty than deliberate self-examination. But, we should reflect, that, during sleep, the mind is more ingenuous, less inclined to palliate its real motives, less influenced by public opinion, and, in general, more open and candid, than when the senses are awake. It is true, that, by the return of external objects, business, and intercourse with the world, dreams are apt to escape from the memory, and that this circumstance, in some measure, deprives us of the advantages which might otherwise result from them. This is, indeed, the only difficulty we have to encounter ; but it is not unsurmountable. It may be removed by a few minutes labour every morning. Let any person who wishes to know his real character, as soon as he gets up, revolve, as accurately as he can, those thoughts which made the deepest impression upon him while he was asleep, what scenes gave him pleasure or pain, what actions he approved or disapproved, and let him instantly write them in a book kept for the purpose. In opposition to a *Diary*, this book may be entitled *A Nocturnal*. The nocturnalist, however, must be careful to give a candid account of his sleeping transactions, marking with accuracy the various feelings which the particular incidents excited. At first, perhaps, his business will be soon executed. But the

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the mere habit of writing, so ductile is the human mind, will soon make him both more attentive to his dreams, and increase his faculty of remembering them.

For the sake of illustration, and to show that this scheme is not impracticable, I shall subjoin, as a specimen, the capital scenes of a few nights dreams which I recorded thirty years ago.

Specimen of a NOCTURNAL.

THE first night I found myself in a most tremendous situation. Alarmed by a sudden shock attended with a hollow subterraneous noise, I ran out to the streets of this populous city, in order to discover the cause. A dreadful prospect presented itself to view. The ground began to undulate like the waves of the sea; sheets of fire dazzled the eye; pales of thunder stunned the ears; the buildings split in a thousand directions; and, had not the native horrors of the scene soon restored me to reason, I should infallibly have been crushed to atoms.

The second night's entertainment, though not so alarming, was much more extravagant and ludicrous. I was for some time diverted with a furious dispute between Dr MONRO and Dr WHYTT concerning the uses of the *Deltoid Muscle*! The combatants at length became so hot, that they were just proceeding to give the dispute an effectual termination by the intervention of the cudgel, when I awoke; and behold it was a dream!

The third night, I found myself in the midst of a brilliant company

of ladies and gentlemen. Cheerfulness and innocence seemed to beam from every countenance. I was treated with the utmost affability and complaisance. My heart began to exult with the most pleasant emotions. The music struck up ; each took his fair partner by the hand, and a sprightly dance immediately commenced. My spirits were much more elevated than I ever had experienced on any former occasion. I moved through the various evolutions of the dance with as much ease and alacrity as if my body had been a mere vehicle of air. But, in the midst of this enchanting scene, while setting to a young lady, my *breeches* fell plump to my heels ! I quickly attempted to lay hold of them ; but in vain. The very power of reaching forth my hand was abstracted from me. I remained fixed as a statue, and the dance was interrupted. The blushes of the company discovered how sensibly they felt my misfortune ; but none had the courage to assist me. In short, the feelings peculiar to such a whimsical situation became at last so exquisitely painful, that I should infallibly have fainted away, had not sleep instantly departed, and restored me to reason and joy.

The fourth night's employment was still more serious and awful. I saw a groupe of winged angels descending from the sky. One of them, who seemed to lead and command the rest, had a large golden trumpet in his hand. When near the surface of the earth, he sounded the instrument, the noise of which made all Nature shrink. He announced the arrival of the last day, that day when the quick and the dead are to be judged, and receive everlasting rewards or torments, according to the merit or demerit of the deeds done by individual mortals. Astonishment and anxiety arrested all the living. They stood motionless, and looked aghast. A new scene instantly appeared. I saw the dead rising in myriads all around me. I particularly

cularly remarked, that, in the *Grey-friars* church-yard, *hundreds* of both sexes pushed one another out of the *same graves* ! The day was so cold and frosty, that the terrified expectants of doom were all shivering. Another phaenomenon solicited my attention. I saw immense numbers of *leaden pipes* filled with *cold water*. Another trumpet was sounded, and the angel proclaimed, that, instead of being roasted in the *flames* of hell, the *damned* were to have their *limbs* eternally immersed in these *water pipes*. Terrified, and half-petrified with this frigifying idea, I got the start, and awoke. Upon examination, I found, that, by some accident, my limbs had been uncovered, and were excessively cold. This simple incident produced the whole scenery I have represented.

But here I must stop, lest I should discover more of my own character than would be consistent with prudence.

S E C T. IV.

Of Ominous Dreams.

THE frequent accounts of ominous dreams we meet with in history, joined to the many stories which are daily related, sufficiently justify a few remarks upon the question, Whether supernatural suggestions are to be expected in dreams ?

To deny the possibility of supernatural suggestions either when asleep or awake, would be both presumptuous and absurd. On the contrary, I can conceive a superior being so thoroughly acquainted with the human frame, so perfectly skilled in the connection and mutual dependence which subsist between our intellect and our sensitive organs, as to be able, by titillating, in various modes and directions, particular combinations of nerves, or particular branches of any single nerve, to excite in the mind what ideas he may think proper. I can likewise conceive the possibility of suggesting any particular idea or species of ideas, by affecting the nerves in the same manner as these ideas affect them when excited by any other cause.

The notion of dreams, however, being frequently suggested by superior beings, is founded partly in ignorance, and partly on a fond regard

regard which men are apt to indulge for every thing that relates to themselves. If it accidentally occurs to a man's mind, which is by no means an uncommon case, that a friend is sick, dead, or in circumstances of great distress ; to satisfy himself, he inquires into the situation of this person. Instead of finding him in the miserable circumstances he had fancied, he perhaps sees him not only in health, but making merry with his companions. This delusive and accidental impression is discovered to be false in every circumstance ; and, of course, it is for ever concealed. But, supposing his friend to have actually been in the situation which he had imagined ; then the case is entirely reversed. He is no longer ashamed of his fond conception. On the contrary, he doubts not that it proceeded from a supernatural cause ; and hence, to gratify his vanity, he tells it on all occasions, in order to insinuate his uncommon connection with heavenly powers.

Allowing that events and situations which mankind represent to themselves, by means of the imagination, do sometimes actually happen ; yet this circumstance is not wonderful. Considering the activity and wanderings of the imagination, it is surprising that so few examples of this kind occur. We never hear of the numberless instances where there is no coincidence between the events and the previous imagination. But, whenever they chance, even in slight relations, to coincide, which is extremely seldom, they are noised abroad with eager industry.

These observations apply to dreaming with accumulated force. In sleep, the imagination is much more active, and the time spent in fanciful representations is vastly greater than when we are awake. A greater variety of incidents, of course, occur in dreaming. Is it not, then,

then, extremely strange, considering the natural disposition of the mind to guess at future events, that a man should continue to dream, both day and night, for fifty or sixty years together, without, perhaps, being able to recollect a single instance of his foreseeing any particular event?

Upon the whole, were the examples of ominous dreams more frequent, and better authenticated than they generally are, they might with great propriety be ascribed to causes merely fortuitous, and totally independent of any supernatural impulse or suggestion.

S E C T.

S E C T. V.

Of the Second Sight, or a Prophetic Power.

THE observations made in the two foregoing sections may, with much propriety, be applied to what is called the *Second Sight*. The persons said to be possessed of this faculty of seeing actual representations, or pictures of future events, are, in Scotland, chiefly confined to the Highlands and western islands. Like many other prophets, both ancient and modern, our professors of *Second Sight* are illiterate, vulgar, and visionary beings. Their pretensions, however, are not mercenary. They neither ask nor receive money for their supposed predictions. In this, as well as in all other countries, while the people remain in a state little removed from absolute barbarism, superstition spontaneously arises from a thousand causes; poverty, idleness, high and rugged mountains, bleak heaths, a sterile soil, naturally excite gloomy and frightful ideas in uninformed minds. Our Highland *seers* are exactly in this melancholy situation. Their predictions, or rather reveries, accordingly, are all expressive of deaths, and other human calamities.

About thirty years ago, a most absurd publication appeared at Edinburgh under the title of *A Treatise on Second Sight*, in which more

than a hundred instances are related, almost the whole of them portending disastrous events. Were it not with a view to banish, as far as I can, a notion so disgraceful to our country, and so humiliating to human nature, I should not have deigned to fill my book with the following specimen: ‘DONALD MACKINNON, an honest tenant in *Halifstra* in *Waternish*, relates, that, in harvest 1760, in the dusk of the evening, as he was binding and putting together corn, on a sudden he saw a neighbour of his foremost, and followed by a pretty throng gathering of people, carrying a corpse directly through a standing corn-field of his own, which he was not well-pleased at; however, through *fear* that it might be a *vision*, he did not chuse to challenge his neighbour. He told what he had seen to his wife and family when he came home, saying, If it was a *vision*, it would undoubtedly be verified ere long; and, to satisfy his mind concerning what he had seen, went early next morning to view the standing corn, to see if any of it was trode down, but not one stalk. About the same time next year, he saw his neighbour, the company and corpse, in reality, coming through the same field from *Grisbirnish*, to bury it at the church-yard of *Trumpan* *.’

This simple example comprehends the spirit and tendency of the whole book; for every story it contains is equally ridiculous.

But here we must pause: The learned and ingenious Dr SAMUEL JOHNSON, who, some years ago, honoured Scotland, and even its Hebrides, with a visit, from similar stories, was credulous enough to believe in the *second sight*. The Doctor’s definition of this ideal faculty is curious. ‘The *second sight*,’ says he, ‘is an impression made either by the *mind* upon the *eye*, or by the *eye* upon the *mind*,
‘ by

* Treatise on Second Sight, p. 159.

‘ by which things *distant* or *future* are perceived, and *seen* as if they ‘ were *present* *.’ To comprehend this definition would require a man to be possessed of both the *first* and *second sights* !

To do justice to the Doctor, however, though he execrates, with a superstitious meanness, that form of church-government called *Presbyterianism*, and prefers to it even *Papal despotism* ; yet, upon this subject, he involuntarily and awkwardly makes a very great and a very just encomium on the good sense and general character of our Highland clergymen. ‘ The islanders,’ he remarks, ‘ of all degrees, ‘ whether of *rank* or *understanding*, admit of it (*i. e.* the second ‘ sight) except the *ministers*, who universally deny it, and are suf- ‘ pected to deny it, in consequence of a *system*, against *conviction*. ‘ One of them honestly told me, that he came to Sky with a *reso-* ‘ *lution* not to believe it †.’

It is not incurious to remark, that men, even possessed of distinguished parts, when urging any favourite topic, frequently contradict themselves, and, from absolute nonsense, inadvertently recur to sense. Of this, the following lines of Dr JOHNSON afford a striking example : ‘ Strong reasons,’ says the Doctor, ‘ for incredulity will ‘ readily occur. This faculty of *seeing* things out of *sight* is local, ‘ and commonly *useless*. It is a breach of the common order of ‘ things, without any *visible* reason or *perceptible* benefit. It is ‘ ascribed only to a people very little enlightened ; and among them, ‘ for the most part, to the *mean* and the *ignorant* ‡.’ The celebrated author of these just observations was a firm believer in the existence of *second sight* ! ‘ The *fore-sight* of the *seers*,’ says Dr JOHNSON,

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* Johnson’s Journey to the Western Islands of Scotland, p. 152. Edin. edit. 1792.

† Ibid. p. 154.

‡ Id. *ibid.*

‘ is not always *prescience* : They are impressed with images, of which
 ‘ the event only shows the meaning *.’

Dr JOHNSON admits what is well known to all our Highlanders, that the persons said to possess this faculty are, in general, ignorant, dozing, indolent creatures, who never work, speak seldom, and spend whole days gaping and gazing straight forward, without altering their position, or taking the smallest notice of what passes around them. The whole employment of their minds, it should appear, is occupied with visionary phantoms : It is not surprising, therefore, that they should, at one time or other, stumble upon scenes or events, to which something similar afterward happens.

In the year 1779, the Reverend Mr DONALD M'NICOL published *Remarks* on Dr JOHNSON'S Journey to the Hebrides, a book written with much spirit, good sense, and acuteness of reasoning. Being born and bred in the Highlands, Mr M'NICOL must be allowed to have had better opportunities of knowing the dispositions, manners, and faith of his own countrymen, than a prejudiced Englishman, who was so *short-sighted*, that he could not *see* a *tree* in Scotland, though he passed many extensive woods and groves, both natural and planted. To show the light in which Mr M'NICOL viewed the narrative of the Doctor's Journey, I shall transcribe a few lines on the subject of *second sight*.

‘ In page 248. our traveller,’ Mr M'NICOL remarks, ‘ comes to
 ‘ examine the question of the *second sight* ; and it is truly surprising
 ‘ to see with what a *credulous weakness* he endeavours to defend so
 ‘ *visionary* an opinion. Other things, which are believed by every
 ‘ man.

‘ man in the country, which are probable in themselves, and are supported by all the evidence that a reasonable man could expect, the Doctor often *rejects*; but *this* point, *absurd* in itself, uncoun- tenanced by any *decent* authority, and to which only a few of the *most ignorant vulgar* give the *least faith*, he maintains with a *zeal* which shews him to be *ashamed* of nothing but *thinking* like *other men* *.’

Even on the supposition that such a faculty as *second sight* existed, the question may be asked, *Cui bono?* For what end should men be endowed with a power, which can only serve to torment them with unnecessary alarms? Though we were enabled to see impending calamities, but deprived, as we are, of the capacity of preventing them, instead of a happy attainment, it would render us perpetually miserable. The evils of human life are already sufficiently numerous; and Nature, for wise purposes, has hid futurity from our eyes.

Like many other superstitions, that of *second sight* must vanish in proportion as knowledge and civilization advance; and it is a pleasure to learn, that it is now nearly extinguished even in the Western Islands of Scotland.

S E C T.

* M. Nicol's Remarks on Dr Samuel Johnson's Journey to the Hebrides, p. 191.

S E C T. VI.

Of Somnambulists—History of Two who fell under the Author's Observation.

ANOTHER remarkable phenomenon, which is sometimes exhibited in sleep, merits attention.—Some people, during sleep, retain the faculties of seeing, hearing, speaking, walking, laughing, crying, and, in general, doing almost every thing they are accustomed to perform when they are awake. Near thirty years ago, I had an opportunity of examining a striking example of *somnambulism*. Within a mile of Edinburgh, I happened to reside some time in a farmer's house. Mr BAIRD, my landlord, had a servant maid, whose name was SARAH. I was not long there, when I learned from the family, that SARAH, particularly after receiving an affront, or being angered, was accustomed to rise in her sleep, to go out, and to walk about the fields. My curiosity was excited; and I begged to be informed the first time that SARAH should rise in her sleep. A few nights afterward, one of Mr BAIRD's sons awaked me, and told me that SARAH had got out of bed. I immediately hastened to the apartment where she slept. When I arrived, Mr and Mrs BAIRD, one of their sons, and a servant maid, SARAH's companion, were present. SARAH was in the midst of them. She was slightly and carelessly clothed. Her neighbour servant persuaded her

her to sit down. I took my seat by her. We began immediately to converse. She answered any questions that were put to her pretty distinctly ; but she always mistook the person who spoke for some other, which gave us an opportunity of assuming any character within the circle of her acquaintance. I knew that one of the farmer's servants, whose name was JOHN PORTEOUS, was a lover of her's ; and, therefore, I addressed her in the style which I supposed JOHN might sometimes have done. From that moment she began to scold me, upbraided me with several breaches of promise to marry her, and desired me, in the most peremptory manner, never again to speak to her on that topic. The conversation was accordingly changed. I talked of her mistress, who was in the room, because I knew that they had occasional quarrels. Till now, I suspected that the whole was a trick, but for what purpose I could not discover. SARAH, however, abused Mrs BAIRD in the harshest terms. She said, but the other day, she had been accused of stealing and drinking some bottles of ale ; that her mistress was suspicious, cruel, and narrow-minded. As the mistress of the house was present, when these and other opprobrious terms were used, I began to doubt my preconceived notion of imposture ; and, therefore, changed the object of my experiments and inquiries. I examined her countenance, and found, that her eyes, though open, wild, and staring, were not absolutely fixed. I took a pin and repeatedly pricked her arm ; but not a muscle moved, not a symptom of pain was discoverable. At last, she became impatient to get out, and made several attempts to escape by the door ; but that was prevented by the domestics. Perceiving her inability to force the door, she made a sudden spring at the window, and endeavoured to throw herself over, which would have been fatal to her. To remove every suspicion of imposture, I desired the people, with proper precautions to prevent harm, to try if she would really precipitate

pitate herself from the window. A seemingly free access was left for her escape, which she perceived, and instantly darted with such force and agility, that more than one half of her body was projected before her friends were aware. They, however, laid hold of her, and prevented the dreadful catastrophe. She was again prevailed upon, though with much reluctance, to sit down. She soon resumed her former calmness, and freely answered such questions as were put to her. This scene continued for more than an hour. I was perfectly convinced, notwithstanding my original suspicions, that the woman was actuated by strong and natural impulses, and not by any design to deceive. I asked if any of the attendants knew how to awaken her. A female servant replied, that she did. She immediately, to my astonishment, laid hold of SARAH's wrist, forcibly squeezed and rubbed the projecting bones, calling out, at the same time, SARAH, SARAH! By this operation SARAH awoke. She stared with amazement, looked around, and asked, how so many people came to be in her apartment at so unseasonable an hour? After she was completely awake, I asked her, what was the cause of her restless and violent agitation? She replied, that she had been dreaming that she was pursued by a furious *bull*, who was every moment on the point of goring her.

A pretty similar example afterwards occurred. Mr THOMAS PARKINSON, then a student of medicine in the university of Edinburgh, was accustomed to talk and to answer questions in his sleep. This fact was known to his companions. To amuse ourselves, two of us went gently into his chamber while he was asleep. We knew that he was in love with a young lady in Yorkshire, the place of his nativity. We whispered her name repeatedly in his ear. He soon began to toss about his hands, and to speak incoherently. He gra-

dually became more calm and recollected. His imagination took the direction we intended. He thought he was stationed under the lady's window, and repeatedly upbraided her for not appearing and speaking to him as she had so often done on former occasions. At last, he became impatient, started up, laid hold of books, shoes, and every thing he could easily grasp. Thinking his mistress was asleep, he threw these articles against the opposite wall of his chamber. By what he said, we learnt, that his imaginary scene lay in a street, and that he was darting the books and shoes at the lady's window, in order to awake her. She, however, did not appear; and, after tiring himself with frequent exertions, he went quietly into bed without waking. His eyes were nearly shut; and, although he freely conversed with us, did not seem to perceive that any person was present with him. Next day, we told him what had happened; but he said, that he had only a faint recollection of dreaming about his mistress.

In the French Encyclopedie, under the word *Noctambule*, we have an account of a student of divinity in the university of Bourdeaux, who was accustomed to rise in his sleep, and to read and write without the use of his eyes. The fact is attested by the Archbishop of BOURDEAUX, who thought it a phaenomenon worthy of his attention. Lest he should have been deceived by the young man, he interposed an obstacle between his eyes and the paper on which he was writing, or reading. But he read and wrote in the same manner, and with equal accuracy, as if no such obstacle had existed.*.

A recent and authentic account of a sleep-walker has been published

* This fact is likewise related by the learned and ingenious Lord MONBODDO, in his *Antient Metaphysics*, vol. 1. p. 159.

ed on the continent, and now translated into English under the title of *A true and surprising Account of a Natural Sleep-Walker, read before the Philosophical Society of Lausanne in Switzerland, on the 6th of February 1788*. This sleep-walker's name is DEVAUD. At the time the following experiments and observations were made upon him under the direction of the society, he was between thirteen and fourteen years of age. His constitution was weakly, and his nerves extremely irritable. The society appointed three of its members, Dr. LEVADE and Messrs REYNIER and VAN BERCHEM, to make and report their observations on the sleeping exertions and behaviour of this young man. These gentlemen faithfully executed the injunctions they had received, and reported the results of the experiments they had made, and whatever authentic relations they procured from others.

His ordinary sleep, which is seldom tranquil, when about to be seized with a fit of Somnambulism, is uncommonly disturbed. While in this state, he is affected with involuntary motions; his heart palpitates; his tongue falters; and he alternately rises up and lies down. On one of these occasions, the gentlemen remarked, that he soon articulated more distinctly, rose suddenly, and acted agreeably to the motives of the dream which then occupied his imagination. When too quickly roused by a violent noise, or other causes, he is sometimes seized with convulsions. After a paroxysm, he complains of being fatigued, and, on some occasions, is affected with sickness and vomiting. At first, when he awoke, and found himself dressed, and in the midst of several persons, his surprise was great. But, after the habit of somnambulism had continued for some time, recollection of similar events, as formerly remarked with regard to disagreeable dreams, gradually diminished his surprise. The ideas of a boy at

school must necessarily be few and simple ; and, of course, his dreams can admit of little variation. His daily visions, cyphering, the church spires, and bells, but chiefly tales of ghosts and hobgoblins, were the principal objects of his nightly visions. When his mind was impressed with particular ideas before going to sleep, which is nothing uncommon, these ideas frequently constituted or gave a direction to his dreams.

The gentlemen examiners mention some effects of electricity and magnetism upon our somnambulist. But, in the translation, (for I have not seen the original), the facts are obscure, uninteresting, and sometimes even contradictory ; and, therefore, shall be passed over in silence.

With regard to the young man's *senses*, we are told, that iron, brass, and silver, applied to his nostrils, made no impression ; but that a bit of cedar, as well as the fingers of another person, gave him some uneasiness. In one of his paroxysms, they presented to him a piece of bread, and some wormwood wine. The latter he immediately distinguished by the smell, and said, *This is not our table wine*. He was afterwards furnished with a little common wine, which he instantly drank. As he was walking along, wrapt up in some dream, two of the gentlemen put themselves in the way he was directing his course ; but he passed between them, without being offended, or seeming to be conscious of the presence of any obstacle. He dressed himself with great propriety in a room which was perfectly dark : He selected his own clothes from a number of others which had been purposely jumbled together, and complained that some of his companions had made sport of him. When his eyes were perfectly shut, he touched, in presence of the gentlemen, several objects, and readily distinguished

distinguished those which he had seen before from those he had not. A book that did not belong to him was put into a drawer where he kept his papers: When he felt the book, he expressed great anxiety lest he should be suspected of theft.

His sense of *bearing* while asleep was very accurate. In one of his reveries, he fancied that he was ringing the bell of 'St Martin's church, and performed all the necessary motions. After this operation was finished, he was asked how long he had rung? he answered, *four minutes*. He took a candle with a design to light it: But one of the company, not perceiving that he held it in his hand, remarked in a low voice, that *he had forgot his candle. Of what use are your eyes*, said DEVAUD, *if you don't see it?*

When our sleep-walker wishes to *see* any object; he makes an effort to open his eye-lids, which he does very imperfectly, and with much difficulty. The ball of the eye, on these occasions, appears to be fixed and languid. On this subject Mr N. — makes the following remarks: 'When I accompanied the sleep-walker, I remained 'always behind him, or by his side; and very often without touching him. I put my face under his, to observe if his eyes were 'really shut; and I found them always closed. However, after 'walking some steps in this posture, he usually discovered me by the 'noise of my feet, and went a little aside. When I still followed 'him, he raised his head, drew up his eye-brows with difficulty, and 'made an effort to open his eyes. This he could do only by halves, 'yet so as to perceive me: *Don't stand in my way*, he said, and held 'on at the same pace. As the moon shone, I had an opportunity of 'examining his eyes very narrowly, and was convinced, that the difficulty he experienced in opening them proceeded from the inaction

‘ of the upper eye-lid, which he could not move without first raising
‘ the eye-brows *.’

The gentlemen examiners made many other experiments upon this sleep-walker. But as, in general, they are of a similar nature with those already related, it is unnecessary to give more examples.

Upon this curious subject, I must mention a singular conversation which happened in my house many years ago. The company consisted of the learned and ingenious Dr REID, at present Professor of Morals in the University of Glasgow, and the no less learned and ingenious Dr BLACKLOCK, both well known in the literary world. Dr REID, among many other questions, asked Dr BLACKLOCK, if he had any idea of light? Dr BLACKLOCK replied, that he had not, being ^{*}deprived of sight so early as the second year of his existence. Dr REID then asked him, if there was any difference between his ideas of persons and objects when he *dreamed*, and those which were excited while awake? Dr BLACKLOCK replied, that the difference was great; that he doubted whether he could communicate this difference in such a manner as to be understood; but that he would make the attempt. His anxiety to please and inform made his explanation at first so obscure and perplexed, that it could not be understood. This perplexity he perceived; retracted what he had said as unintelligible; and, with some degree of exultation, exclaimed, ‘ Now I have it.’ He then told us, that, when awake, he could distinguish persons three ways: The most perfect of which was that of hearing them speak; but he could also recognise an acquaintance by feeling his head and shoulders. The third mode of distinction was by attending, without the aid of speech, to the sound and manner of breathing.

* See the above mentioned Pamphlet, p. 25.

breathing. He then proceeded, and told us, that, in sleep, the objects which presented themselves to his imagination were more vivid, and that without the intervention of any of the three modes mentioned above, he had distinct perceptions of *distant objects* both animated and inanimated. Being asked by what means he thought these impressions were conveyed to him, he replied, that he imagined his body was united to theirs by a kind of *distant contact*, which was effected by the instrumentality of *threads* or *strings* which proceeded from their bodies to his own ; and that mutual ideas were conveyed by *vibrations* of these *strings*. The Doctor could not come nearer to the point ; for, though what he said did not amount to ideas excited by actual *vision*, yet the approach was astonishingly near.

S E C T.

S E C T. VII.

Some unconnected Facts concerning Sleep and Dreaming.

MAN is not the only animal that dreams. From many facts, and a very extensive analogy, it is almost certain, that every animal dreams more or less. Dogs bark in their sleep. This barking is indeed feeble ; but the sounds peculiar to the chase, to anger, to desire, to complaint, &c. are easily distinguishable. I have often regretted, that ingenious men, when supporting favourite theories, should so frequently relate the grossest absurdities. The celebrated M. DE BUFFON, in his *Dissertation on the Nature of Animals*, gravely tells us, ‘ that *idiots*, whose *minds* are totally *inactive*, *dream* ‘ like other men : *Dreams*, therefore, are produced independent of ‘ *mind*. Brute animals, though they have *no mind*, not only *dream*, ‘ but I am tempted to think, that all *dreams* are independent of ‘ *mind* *.’ A most brilliant sentiment, and most *logically* expressed ! Dreaming, thinking, or even feeling, without the intervention of *mind*, involve ideas beyond the limits of human understanding.

When about to sleep, most animals chuse a particular position of body. The camel places his head between his fore feet; the monkey,

VOL. II.

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* Buffon, vol. 3. p. 256. Translat.

like man, lies on his side ; most birds sleep with their head under one wing. The *psittacus galgulus*, a species of parrot, hangs by one foot on the branch of a tree ; and some spiders, and other insects, suspend themselves by their fore legs.

A horse, when in good health, lies not above two or three hours at a time, and seldom sleeps more than three or four hours in the twenty-four. Some horses never lie down, but sleep standing ; and even those which are accustomed to lie down, sometimes sleep on their feet. The ass sleeps still less than the horse ; and, for that purpose, never lies down, except after great fatigue *. The heaviest and most sluggish animals do not sleep the longest or the most profoundly. The slumbers of the ox are light and short. He is roused by the slightest noise : He generally lies on the left side ; and the left kidney is always larger and fatter than the right †. The sleep of cats, is, in general, light ; but sometimes they have been seen sleeping with much more profoundness than most other animals ‡. The sow-kind sleep longer than most quadrupeds.

Man, perhaps, sleeps longer than any of the larger animals. Beside the natural waste occasioned by exercise and labour, the perpetual activity of his mind fatigues the body, and renders a greater quantity of sleep necessary.

Badgers sleep the whole night and three-fourths of the day ; yet, like the marmottes or dormice, they are subject to a lethargic or benumbed state during winter. This great quantity of sleep, though they eat little, makes them very fat ; for this reason, they are enabled

to

* Buffon, *ibid.* p. 416.

† *Ibid.* p. 442.

‡ *Ibid.* vol. 4. p. 55.

to endure hunger a long time, and often remain in their holes three or four days together, without receiving the smallest nourishment.

Another affection, peculiar to the state of sleep, is the *incubus*, or *night-mare*. This affection, in general, is produced by indigestion, and by eating too much, and particularly of flesh-meat, at supper. It is likewise sometimes occasioned by lying, while asleep, on the back, and the bed-clothes, of course, pressing on the breast. From whatever cause the *night-mare* proceeds, it is uniformly accompanied with great terror, and a sense of suffocation; for by the pressure of wind, or some other cause, upon the lungs, respiration is either prevented, or very much impeded. The sensations excited by this cause are always of the most excruciating nature. The imagination presents the ideas of some spectre or demon lying on the breast, or of situations which necessarily infer suffocation and death. When the sufferer attempts to throw off the load, or to escape from the impending danger, he discovers a total inability to move any of his members. This circumstance augments his terror and his pain, and, at last, banishes sleep. When he awakes, the imaginary weight, or cause of terror, is removed, and the power of motion is restored. But the palpitations of the heart, and the confusion of the brain, remain for some time, till the paroxysm is completely finished; and then the whole is recognised to have been only an imaginary delusion*.

is desirous of seeing a more full discussion of this subject, he may consult Dr ~~Watts~~, *De Anima Brutorum*, a learned and ingenious work, published in the year 1672.

CHAPTER VI.

Of those Animals who sleep, or continue in a torpid state, during Winter.

THAT state of animal existence denominated *sleep*, may be considered as an universal affection. Almost every animated being is subject to its dominion. As formerly remarked, some animals require more and others less sleep, according to their constitutions and other circumstances. But there are many animals who continue to sleep during the whole months of winter. While in this condition, they neither move nor take food; and yet they revive on the approach of summer. Of these a few examples shall be laid before the reader.

It is well known, that many quadrupeds and insects remain in a torpid state during winter; but it is a remarkable fact, that not a single species of birds, except the swallow and cuckoo, have ever been supposed to sleep during the winter months. With regard to the swallow-tribe, I must refer the reader to my first volume, where this subject is amply discussed *.

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* Philof. of Nat. Hist. vol. 1. p. 473.

The land-tortoise is a very long-lived animal. Mr WHITE * gives an account of one that lived more than forty years in a little walled court. During that period, it regularly retired under ground about the middle of November, and came forth again about the middle of April. On its first appearance in the spring, it discovered very little inclination for food ; but, in the height of summer, it was very voracious. As the summer declined, its appetite grew less ; and, during autumn, it hardly ate any thing. In the month of April 1780, Mr WHITE informs us, ‘ a moist and warm afternoon, with the thermometer at 50, brought forth troops of *shell-snails* ; and, at the same juncture, the *tortoise* heaved up the mould and put out its head ; and the next morning came forth, as it were raised from the dead, and walked about till four in the afternoon †.’

The *Alpine marmots*, on the approach of winter, retire to their subterranean abodes, the entrances to which they shut up with earth or clay. In this situation they continue to be plump for three months ; but afterwards they gradually decay, and are extremely emaciated at the end of winter. When discovered in their retreats, they are found to be rolled up in the form of a ball, covered with hay ; and they are carried off by the hunters in a state so torpid, that they may be killed without showing the smallest symptom of pain. They may be revived by a gradual and gentle heat ; and those which are tamed and fed in houses never become torpid, but are as lively and active in the winter as in the summer. Their holes are deep, and they live together in numbers. The fattest are selected for eating, and the young ones are preserved for taming ‡.

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* White's Nat. Hist. of Selborne, p. 135, &c.

† Ibid. p. 262.

‡ Buffon, vol. 4. p. 344. Translat.

The different species of *bats* sleep during the winter months. The final cause of their torpidity is obvious. In that season, there are no moths, or other flying insects, the chief food of bats. Hence, if Nature did not confer this faculty, or rather inactivity, upon them, a single winter would annihilate the species. ‘The prevailing notion,’ says the Honourable DAINES BARRINGTON, ‘that they hang always in clusters touching each other, is not true, as this depends entirely upon their having a proper opportunity of adhering to the place from which they are suspended; they sometimes, therefore, are in contact, and often at considerable distances, but always fix themselves by both their feet *.’ It is a well known fact, that bats, whilst in a torpid state, evacuate their dung, and, of course, both the circulation of the blood, and a certain degree of muscular action, continue to be exerted. Mr CORNISH applied a thermometer to the body of a bat when perfectly torpid; the liquor stood at 36, and the heart beat 60 times in a minute. When awakened so much that the same animal could fly a little, the thermometer was again applied, the liquor rose to 38, and the heart beat 100 times in a minute.

Some animals who sleep during winter, may be kept awake by supplying them with warmth and proper food. Of this kind are the bear, the viper, and the common house-fly, which, under these circumstances, continue alert and cheerful through the whole year.

The *fat squirrel*, a quadruped about six inches in length, the *sciurus glis* of LINNÆUS, remains in a torpid state during winter. Its internal heat exceeds not that of the air. When the heat of the air is ten degrees above the freezing point, the temperature of the *fat squirrel*,

* Daines Barrington’s Miscellanies, p. 166.

squirrel, the *dormouse*, and the *garden squirrel*, is precisely the same, as M. de BUFFON discovered by plunging the ball of a thermometer into their bodies. We cannot, therefore, be surprised that these animals, whose natural heat is so inconsiderable, should fall into a benumbed state, whenever their internal heat is not augmented by that of the external air, which uniformly happens when the liquor in the thermometer does not rise ten or eleven degrees above the freezing point. Cold is the true cause of the torpid state of what are called the *sleeping* animals. This torpid state continues as long as the cause by which it is produced, and ceases with the cold. A few degrees above ten or eleven is sufficient to revive them; and, if kept in a warm place during winter, they are never benumbed, but go about, and eat and sleep like other animals. When they feel uncommonly chilled, in order to expose less surface to the air, and to preserve their natural warmth, they roll themselves up in the form of a ball. It is in this form that they are found, during winter, in hollow trees, and in holes of walls exposed to the south. In these holes they lie upon collections of moss and leaves, without the smallest motion; and, though tossed about, they neither extend themselves, nor discover the least symptom of life. From this dormant condition nothing can rouse them but the application of a gentle and gradual heat; for, when suddenly placed near a fire, they uniformly die. Though, in this state, they are totally deprived of motion, though their eyes are shut, and the animals seem to have lost every species of sensation; yet they feel any acute pain. When burned or wounded, they contract their bodies, and utter low and repeated cries. Their sensibility, therefore, and the action of the heart and lungs, still subsist. It is obvious, however, that these vital motions are but feeble. The circulation of the blood, it is probable, proceeds in the large vessels only; for the respiration is slow and feeble, the
secretions

secretions are inconsiderable, and no excrements are voided. In long and rigorous winters, they sometimes die in their holes. They perish not, it should appear, by the loss of substance from perspiration ; for in autumn they are exceedingly fat ; and equally so when they revive in the spring. As cold is the chief, if not the only cause of their torpor, and as they do not fall into this state till the temperature of the air is below ten or eleven degrees, they frequently revive during the winter ; for, in that season, many days often occur when the liquor in the thermometer rises to twelve, thirteen, fourteen, and even higher degrees above the freezing point. In weather of this kind, the dormice either come out of their abodes in quest of food, or eat part of what they had amassed in autumn.

The *Hamsters*, or German marmots, on the approach of winter, retire into their subterraneous abodes, where they remain in perfect tranquillity, and feed on their provisions till the frost becomes severe, when they sink into a torpid state. During this period of their existence, if the holes be opened, the hamster is found lying on a bed of straw. His head is bended under his belly between the two fore-legs, and those behind rest upon his muzzle. The eyes are shut ; and, when the eye-lids are forced open, they instantly close again. His members are stiff, like those of a dead animal, and the whole body feels as cold as ice. Neither respiration, nor any other sign of life, can be perceived. When dissected in this situation, the heart alternately contracts and dilates. These movements, however, are so slow, that the pulsations do not exceed fifteen in a minute ; though, when the animal is awake, the heart, in the same time, beats an hundred and fifty strokes. The fat seems to be coagulated. The intestines are equally cold with the external parts of the body, and, upon the application of spirit of wine, or oil of vitriol, discover not the

smallest degree of irritability. During this operation, the animal seems to have very little feeling. As if he wanted to respire, he sometimes opens his mouth. But his torpor is too powerful to admit of his awaking entirely.

This lethargy of the hamster has been ascribed solely to the effects of a certain degree of cold, which may be true with regard to the bats and dormice; but, in order to render the hamster torpid, beside cold, he must likewise be excluded from all communication with the external air: For, when shut up in a cage, filled with earth and straw, and exposed to a degree of cold sufficient to freeze water, the hamster never becomes torpid. When the cage, however, is sunk four or five feet under ground, and secured against the access of air, in a few days, he is equally torpid as if he had been in his own burrow. If the cage is brought up to the surface, the hamster, in two or three hours, awakes, and resumes his torpid state when again put under the earth. When passing from a torpid to an active state, the hamster first loses the rigidity of his members, and then makes profound respirations, but at long intervals. His legs begin to move, he opens his mouth, and utters rattling and disagreeable sounds. After continuing these operations for some time, he opens his eyes, and endeavours to raise himself on his legs. All these movements, however, are still unsteady and reeling, like that of a man intoxicated with liquor. But he reiterates his efforts, till he acquires the faculty of standing on his legs. He remains, for some time, fixed in that attitude, as if he meant to reconnoitre, and to repose himself after his fatigue. He now gradually begins to walk, to eat, and to act in his usual manner. According to the temperature of the air, this passage, from a torpid to an active state, requires more or less time. In a cold air, he is generally more than two hours before he completely awakes;

awakes ; but, in a more temperate air, he accomplishes this purpose in less than one hour. It is probable that this change is produced imperceptibly when the animal remains undisturbed in his hole, and that he feels none of the inconveniencies which arise from a forced and sudden reviviscence *.

The *Hedgehog* is one of those quadrupeds which lie in a dormant state during the winter months. Some years ago, that ingenious, learned, and dexterous anatomist, Dr ALEXANDER MONRO, made some experiments upon the hedgehog, as well as upon frogs, though he informs me †, that he did not prosecute these experiments with all the accuracy and attention which the curiosity of the subject merits. During a severe winter, he kept a hedgehog in a room, where there was no fire from the month of November till March. He placed near the animal boiled beef, bread, cheese, potatoes, water, and straw. About the beginning of December 1764, the hedgehog was affected with an unusual degree of drowsiness. He, however, continued to eat, though more sparingly, till the 25th of that month. From that time till the 8th day of March following, he continued in a profound sleep, except when artificially roused. After being thus roused, he soon walked back to his place of retreat, and resumed his dormant state. On the 25th of December, he weighed thirteen ounces and three drachms ; on the 6th of February eleven ounces and seven drachms ; and, on the 8th of March, eleven ounces and three drachms. The Doctor observed a small quantity of feculent matter and urine among the hay. At the time of his actual reviviscence, no person was present ; and, of course, the circumstances attending it are unknown. In the course of three months, he did not perceive

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* For these and similar facts, see Buffon and many other natural historians.

† In a letter, dated March 1794.

that the hedgehog had either ate or drank ; but it remained constantly in a profound sleep among the straw. Its limbs, however, were never rigid ; but it lost two ounces of its weight. *Frogs*, which the Doctor kept during the winter in a vessel with water, seemed to be in a similar state with that of the hedgehog.

From every example we have enumerated, it appears, that extreme cold, and an exclusion from a free access to the operation of the external air, are the principal causes which produce the torpidity of certain brute animals. We shall now make a remark upon what happens to the human species when exposed to great cold, especially if accompanied with bodily fatigue. Men in this situation, of which fatal instances too often occur, feel an almost irresistible inclination to lie down to rest. When they yield to this propensity, being benumbed with cold, they soon fall asleep ; and this sleep infallibly terminates in death. Those animals, however, who sleep during the winter, uniformly not only retire below ground, or into some other recess, but cover themselves with substances which resist such deleterious effects of cold as would destroy their existence. If man and the larger animals, when benumbed and actually asleep from the operation of cold, were placed in similar circumstances, it is probable they might be induced to sleep a very great length of time, and again awake without suffering much injury.

CHAPTER VII.

Of the Language of Beasts.

UNDER the term *beasts*, in the course of this chapter, I comprehend all those animals, of every class, who are inferior in mental powers to the human species. We can only perceive the language of beasts by attending to the particular cries they make, and to the influence which these cries have upon the feelings and actions of their associates. This subject is very copious. But I must limit myself to a few facts, accompanied with such remarks as they may occasionally suggest.

I shall begin with the class of quadrupeds. But it is necessary to inform my readers, that by the *language of beasts*, I mean not what is called *articulate* or *artificial* language, but such vocal *sounds* as are expressive of different feelings, wants, and desires, by which animals are enabled to communicate particular sentiments to each other.

In opposition to *artificial* language, the nature of which depends upon convention or agreement, and sometimes upon mere accident, there is a *natural* language which is common to man and to most of the

the inferior animals. Men possess both these species of language ; but the brute animals are limited solely to natural language. Brutes, by uttering certain sounds, are enabled to communicate their feelings, whether external or internal, to every individual of the same species. These assemblages of inarticulate sounds are uniformly the same, and, contrary to what takes place in the artificial language of man, suffer no variation from climate or institution, but are equally intelligible in every division of the globe.

The *elephant* loves the society of his equals, and can make himself to be understood by them. Elephants are often observed to assemble in troops, to act in concert, and again to disperse. These movements are not accidental, but produced by certain sounds and gestures ; and, though they carry on no common operation, this circumstance may, perhaps, be ascribed to the want of room and of tranquillity ; for, in all countries inhabited by the elephant, men have been very antiently multiplied ; he is, therefore, perpetually disturbed, and no where possesses peaceably sufficient space to establish secure and permanent abodes. Elephants, in a wild state, are neither sanguinary nor ferocious. Their natural dispositions are gentle, and they never make an improper use of their arms or their strength ; for they exert their offensive talents only in defending themselves, or in protecting their companions. Their manners are social. They commonly march in numerous troops ; the eldest precede ; the young and the feeble are placed in the middle ; and those of middle age and full of vigour bring up the rear. The mothers carry their young firmly embraced in their trunks. This order, however, they observe in perilous marches only, as when they intend to pasture on cultivated fields. In the deserts and forests, they travel with less precaution, but never separate so far as to exceed the possibility of receiving assistance from each other.

other. When alarmed with any dangerous attack, they utter *cries* expressive of their situation and want of assistance. The meaning of these cries is perfectly understood by all the elephants within the reach of hearing; and they immediately run with eagerness to the relief of their distressed or apprehensive companions. When an elephant discovers a plentiful pasture, he *calls* to the others, and invites them to partake of his good fortune. From the great sagacity with which Nature has endowed him, he soon becomes acquainted with the language, gestures, and desires of men. He is, of course, easily tamed, instructed, and rendered submissive and obedient. As he is stronger as well as more intelligent than any other animal, his services are more ready, more extensive, and more useful. When the hunters go in quest of a wild elephant, they carry along with them into the forest a tamed female in season; and, when they imagine themselves to be near enough to be heard, her governour makes her utter the *cry* of love. The wild male instantly *replies*, and hastens to join her. She is then made to march towards an inclosure, pitfall, or other snare, repeating, from time to time, the same alluring cry, till he is completely deceived and caught. In a domestic state, the elephant soon learns to understand signs, and even the meaning of words, sounds, and gestures. He distinguishes the tones of command, of anger, and of approbation, and regulates his actions accordingly. He never mistakes the voice of his master; but receives his orders with attention, executes them with prudence and alacrity, but without any degree of precipitation; for his movements are always measured, and his character seems to partake of the gravity of his mass. After this animal has had time to learn the *language* of his conductor, *words* alone are sufficient to make him perform whatever is required of him. The eyes of the elephant, in proportion to the magnitude of his body, are very small, but lively, brilliant, and
highly

highly expressive of sentiment. He turns them slowly and with mildness towards his master. When he speaks, the animal regards him with an eye of friendship and attention ; and his penetrating aspect is conspicuous when he wants to anticipate the inclinations of his governor. He reflects, deliberates, thinks, and never determines till he has several times examined, without passion or precipitation, the signs or commands which he ought to obey. As the elephant is naturally grave and moderate, we easily read in his eyes, whose movements are slow, the order and succession of his internal affections. The cry of the elephant, whether excited by love or other sensations, is heard and understood at the distance of more than a league ; but it does not, like the roaring of the lion or tyger, create terror. When the *cornack*, or conductor of the elephant, wishes to have some laborious office performed, he explains the nature of the operation, and mentions the reasons which should induce him to obey. If the elephant seems reluctant, his conductor promises to give him arrack, or some other thing of which he is fond. But it is extremely dangerous to break any of these promises. Many cornacks have fallen victims to indiscretions of this kind. A well authenticated fact, on this subject, happened at Dekan. An elephant, from some motive of revenge, killed his cornack. The man's wife, who beheld the dreadful scene, took her two children and threw them at the feet of the enraged animal, saying, ' Since you have slain my husband, take my life also, as well as that of my children.' The elephant instantly stopped, relented, and, as if stung with remorse, took up the eldest boy with its trunk, placed him on its neck, adopted him for its cornack, and would never afterwards allow any other person to mount it.

Among the larger species of animals, the *camel*, the *dromedary*, the *barse*, &c. not only express, by particular sounds, their own wants, or desires, their pleasures and pains, but, when in a domestic state, learn the meaning of *words*, and know distinctly how to obey the commands of their masters. A troop of camels, when travelling in the sandy deserts of Africa, after a repose, the moment they are *desired*, bend their knees, and lie down to be again loaded. These gentle and inoffensive creatures must suffer much; for, especially when over-loaded, or when too long in want of water, they express their uneasiness by uttering the most lamentable cries. In marching through the desert, the camels require neither whip nor spur; but, when they begin to be tired, their courage is supported, and their fatigue is softened, by *songs*, or by the sound of some musical instrument. Their conductors relieve each other in singing. When time is likely to be too much prolonged, the animals are occasionally allowed to rest only about an hour; after which, the songs are renewed till they arrive at another resting place, when they again lie down. In this manner, and by these means, the camels, with heavy loads, perform journies almost incredible.

The language of the *horse* is not extensive. Mares and geldings neigh less frequently than perfect horses. Their voices also are neither so deep nor so full. In horses of every kind, whether entire or mutilated, five species of neighing, expressive of different passions, are distinguishable. In the neigh of *joy*, the voice is long protracted, and begins and terminates with sharp sounds: The horse, at the same time, flings, but without any inclination to strike. In the neigh of *desire*, whether proceeding from love or friendship, the horse does not fling, the voice is long continued, and finishes with graver tones. The neigh of *anger*, during which he flings

and strikes with fury, is very sharp and short. Neither is the neigh of *fear*, during which he likewise *flings*, longer than that of anger; the voice is grave and hoarse, and seems as if it proceeded entirely from the nostrils. This neigh has some resemblance to the roaring of a lion. The noise expressive of *pain* is not properly a neigh, but a kind of groan or snorting uttered with a grave tone, and following the alternate motions of respiration. It has been remarked, that horses which neigh most frequently, from motives of joy or desire, are the most generous and healthy. The voice of unmutated horses is stronger than that of geldings or of mares. The female voice, even from the moment of birth, is weaker than that of the male. At two, or two and a half years, which is their age of puberty, the voices of both males and females, as in man and most animals, become stronger and more grave. In that large and thinly peopled country, comprehended between the rivers Don and Nieper, in the Ukraine, and among the Cossacks, the wild horses associate in troops of three, four, or five hundred. The conduct and behaviour of these troops seem to indicate, that men are not the only animals who live in society and obey, by compact, the commands of one of their own number. Each of these troops have a chief to whom they give implicit obedience. By gestures, movements, and *voice*, he directs their course, and makes them proceed or stop at his pleasure. When the troop is attacked by robbers, or by wolves, this chief likewise gives *orders* for the necessary arrangements and actions. He is extremely vigilant and alert, runs frequently round the troop, and, when he finds any horses out of their rank, or lagging behind, he commands and obliges them to take their proper stations. These animals, without being mounted or conducted by men, march in nearly as good order as our trained cavalry. Though at perfect liberty, they pasture in files and brigades,

gades, and form different companies, without ever mixing or separating. The chief occupies this important and laborious office four or five years. When he becomes weaker, and, of course, less active, another horse, ambitious of command, and who is conscious of his own strength, springs out from the troop, attacks the old chief, who, if not vanquished, keeps his command; but, if beat, he enters, with evident marks of shame and regret, into the common herd. The conqueror instantly takes the lead, is recognised as sovereign, and obeyed by the whole troop*.

With regard to the *ox-kind*, their language is very limited. The bull seldom bellows but when he feels the ardours of love, and the female perfectly understands the meaning of what he *utters*. When strangers appear in his pasture grounds, he eyes them with suspicion, utters deep-toned murmurs, assumes a threatening aspect, and sometimes runs furiously at the intruders. These menacing tones and gestures are not, as generally imagined, indications of a natural ferocity of disposition. On the contrary, they are the expressions of heroism and of gallantry. By the sounds he utters, the females are alarmed and put upon their guard. They approach near him, and regard him as their protector and champion. The lowings of the cow proceed oftener from terror or timidity than from any other cause; and pain, hunger, or the absence of the mother, produce the complaints of the calf.

Sheep have been represented by the COUNT DE BUFFON and by many other natural historians, as the most stupid of all quadrupeds.

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* See descrip. de l'Ukraine par Beauplan, and a Memoir communicated to the Count de Buffon by M. Sanchez, formerly physician to the Russian army.

This charge, however, seems not to be altogether just. In a state of subjection, individuals seldom resist the attacks of an enemy. But they soon learn that their protection lies in the shepherd and his dog ; for, when it is necessary to watch the flock, in order to prevent the assaults of wolves, foxes, or dogs, upon the first alarm, the whole run with violence to the place where the watchmen are stationed. On other occasions they never choose to make a very near approach either to men or dogs ; but the sense of immediate danger removes their usual timidity, and their sagacity teaches them where to seek protection. These associated movements are effected both by imitation and by peculiar *cries*, or bleatings, expressive of alarm and of danger ; for, though a very few individuals only perceive the common enemy, yet, by motion and language, the intimidating sentiment is in a moment communicated to the whole. When the female loses or is robbed of her lamb, she *cries* in a manner strongly expressive of the anguish she feels. In the eagerness of her search, the loudness of her complaints, and her desultory movements, her eye-balls seem to start from their sockets ; and her irregular and distracted motions and distortions, joined to the violence and constancy of her bleatings, are evident indications of the most pungent grief. A young lamb, when it wanders from its mother, in the midst of the most numerous flocks, runs precipitantly about, and *cries* in pitiable tones. These *cries* the mother recognises, distinguishes them to be those of her own offspring, and instantly joins the lamb ; their congress is attended with mutual expressions of the greatest joy.

With regard to mental and corporeal powers, the *goat* is much superior to the sheep. He approaches man spontaneously, and is easily rendered familiar. He is fond of caresses both by the hand
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and by *words*, and is capable of a considerable degree of attachment to those with whom he is familiar. When kept, like dogs or cats, in a domestic state, the whole powers of the goat are called forth. He utters *sounds* expressive of all his desires, and understands, in a limited degree, what is *said* to him by any of the family, as well as by all those who live in the neighbourhood. When he has remained some time in this state, his natural talents are unfolded and improved in a high degree. He knows personally every man, woman, child, and dog, within his usual range. His natural genius, which is bold and adventurous, when improved by domestication, renders him often frolicsome and even petulant. But, except to strangers, he is seldom seriously mischievous.

The natural sagacity and talents of the *dog* are well known and justly celebrated. But, when these are improved by associating with man, and by education, he becomes, in some measure, a rational being. The senses of the dog, particularly that of scenting distant objects, give him a superiority over every other quadruped. He reigns at the head of a flock, and his *language*, whether expressive of blandishment or of command, is better heard and better understood than the *voice* of his master. Safety, order, and discipline are the effects of his vigilance and activity. Sheep and cattle are his subjects. These he conducts and protects with prudence and bravery, and never employs force against them, except for the preservation of peace and good order. But, when in pursuit of his prey, he makes a complete display of his courage and intelligence. In this situation, both his natural and acquired talents are exerted. As soon as the *horn* or the *voice* of the hunter is heard, the dog demonstrates his joy by the most expressive emotions and *accents*. By his movements and *cries*, he announces his impatience for combat, and

and his passion for victory. Sometimes he moves silently along, reconnoitres the ground, and endeavours to discover and surprise the enemy. At other times, he traces the animals steps, and, by different modulations of *voice*, and by the movements, particularly of his tail, indicates the *distance*, the *species*, and even the *age* of the fugitive deer. All these movements and modifications of *voice* are perfectly understood by experienced hunters. When he wishes to get into an apartment, he comes to the door; but if that is shut, he scratches with his feet, makes a bewailing *noise*, and, if his petition is not soon answered, he barks with a peculiar and humble *tone*. The shepherd's dog not only understands the *language* of his master, but, when too distant to be *heard*, he knows how to act by signals made with the hand.

The senses of the *fox* are equally good as those of the *wolf*; but his sentiments are more delicate, and the organs of his voice more pliant, which enable him to use a more extensive *language*. The wolf utters only frightful howlings; but the fox barks in different tones, yelps, and raises a mournful cry something resembling that of the peacock. He varies his tones according to the different sentiments with which he happens to be affected. He employs an *accent* peculiar to the chase, to the tone of desire, of complaint, and of sorrow. He has another *cry*, expressive of acute pain, which he utters only when he is shot, or has some of his limbs broken. His yelping is a species of barking, and consists of a quick succession of tones; at the termination of which he generally raises his voice similar to the cry of the peacock.

The language of the *cat* is more limited than that of the dog. Still, however, it is highly expressive of her feelings and desires.

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When she wants to flatter, or to solicit favour, she makes a *purring* noise, accompanied with blandishing movements, and often rubs her sides upon the shins or garments of the person from whom she expects gratification. In the season of love, the female not only goes in quest of the male, but announces, by loud *cries* and disgusting motions, the pressure of her necessities. These *cries* never fail to excite the sentiments and procure the attention and assistance of the male. When a cat happens to be barred out, her *mew* of anxiety, or her petition to get admittance, is perfectly different from most of her other cries, but seems to be the same with that which she utters when desirous of food.

The *roe-buck* bellows not so frequently, nor with so loud or so strong a voice, as the stag. The young ones utter a short and plaintive cry, *mi...mi*, by which they indicate their want of food. This sound is easily imitated; and the mother, deceived by the well-known *call*, often comes up to the very muzzle of the hunter's gun, and falls a victim to her maternal affection.

With regard to the *orang-outang*, the various species of *apes* and *monkeys*, their conformation gives many of them a near resemblance in external figure to that of man. From this circumstance, they are enabled to imitate almost every human action. LINNÆUS, and some other authors, have even gone the length of affirming, that the *orang-outang* *speaks* with a kind of hissing voice. But we have no proper evidence of this supposed fact. On the contrary, the COUNT DE BUFFON, who often examined the smaller species of *orang-outang*, denies that this animal ever uttered any sounds which had the most distant resemblance to articulate language. By the mode of chattering and other sounds, however, any person may soon learn their

their particular intentions and emotions. BATTEL, who describes the largest species of orang-outangs, tells us, that 'they cannot *speech*, and have no understanding more than a beast *.' By *speech*, in this passage, BATTEL evidently means *articulate* language; and this very circumstance is, perhaps, more than figure and manners, the strongest characteristic which distinguishes mankind from the brute creation. The CQUNT DE BUFFON has collected, from the most authentic travellers, a great number of facts concerning the general manners and sagacity of the two species of orang-outangs; but, it should appear, he has not been able to obtain much information as to their language, or modes of expressing their passions and sentiments. Notwithstanding the great similarity between the form and organization, both external and internal, of the orang-outang, and the general structure of man, yet he cannot lay claim to humanity. Though he has the same organs of *speech*, he never attempts to *articulate*. The figure and proportions of his brain are likewise the same; but he discovers no extent of thought. There cannot, M. DE BUFFON properly remarks, be a more evident proof than is exhibited in the orang-outang, that matter alone, though perfectly organized, can produce neither language nor extensive thinking, unless it be animated by minds superior to those of brutes.

The *pigmies* are very numerous in the mountains of Mauritania, Constantia, and Bugia. We are informed by MARMOL, that they live upon herbs, corn, and fruits; that, in their depredatory expeditions, they go in troops to rob the gardens or fields; but, before leaving the woods or thickets, one of them ascends a high tree, or some eminence, from which he takes a survey of the country, and, when he observes no person in the way, he gives the signal, by a *cry*, which

* Purchas's Pilgrims, part 2. p. 982.

which is perfectly understood, that the troop may proceed with safety, and leaves not his station as long as his companions are foraging abroad. But, whenever he perceives any person approaching, he *screams*, with a loud and intelligible voice, warning the robbers of their danger, when the whole, by leaping from tree to tree, fly off, and make their escape to the mountains.

In Senegal, many other species of apes, baboons, and monkeys, when robbing orchards or corn-fields, observe a similar conduct with that of the pigmies. One of them, on these occasions, stands sentinel on a tree, listening and looking about on all sides, while the others are busy in collecting the booty. When the sentinel descries any person, he instantly, by loud and significant *shrieks*, alarms the foraging troop, who obey the signal, and fly off with their prey*.

The *ouarines*, a large species of American monkeys, are distinguished by the appellation of *preachers*. MARCGRAVE, in his History of Brasil, relates the following facts concerning these preacher-monkeys, which, he assures us, he himself often witnessed. The facts are, That, every morning and evening, the ouarines assemble in the woods; that one of them assumes a more elevated station, and makes a signal with his hand for the others to sit around and listen to him; that, when they are all seated, he begins a *discourse* so loud and rapid as to be heard at a great distance; that all the rest keep the most profound silence; that, when he stops, he gives a signal with his hand for the others to reply; that, in an instant, the whole cry together, till he commands silence by another signal, which they, in a moment, obey; that the first resumes his *harangue*; and that, after hearing him attentively for a considerable time, the assembly

breaks up *. It were to be wished that MARCGRAVE had endeavoured to discover the intention of these *field-preachings*; for, if the circumstances he relates be true, and I know no objection to his veracity, it is evident that the animals must be actuated by some peculiar motives. These *barangues*, perhaps, may, like our houses of Parliament, have some common interest for their object, and contain directions for the most prudent modes of accomplishing their purposes.

We shall now leave the language of *quadrupeds*, and proceed to mention a few particulars concerning that of *birds*. Brevity here is the more necessary, because in many places of my former volume, though treating of very different subjects, instances of the language of brute animals not unfrequently occur. Here I shall not confine myself to any systematic arrangement, but content myself with rambling, without any limited order, through the eloquence of the feathered tribes.

In general, it may be remarked, that every species of birds have peculiar modulations of voice expressive of love, of pain, of anxiety, of anger, of complacency, and of good or bad fortune. These expressions, however, seem to be confined and intelligible to the individuals only of the same species. But there are certain sounds, particularly those of danger and of terror, which are perfectly understood, not only by the same species, but even by different genera and orders of birds. When the fox wishes to surprise birds in the neighbourhood of hedges, brush-wood, or trees, he lies down on his belly, and extends his hind-legs as if he were dead. In this situation, however, he is perfectly vigilant, and cunningly observes the motions

* Marcgrav. Hist. Bras. p. 226.

motions of the birds along the hedges and trees. If any of them happen to spy him, they immediately send forth soft, mournful, but shrill *cries*, to alarm their neighbours, and to advertise them of the enemy's approach. Blackbirds and jays have been frequently observed to follow the fox, flying from tree to tree, and often repeating the same *cries* of alarm and of danger. These *cries*, by whatever birds they are uttered, are understood by every species within reach of hearing, who instantly use all their arts of defence against the common enemy. Birds are well acquainted with their natural enemies, and this knowledge seems to be purely instinctive, and not derived from experience or observation. When they observe the *pine-weasel*, though for the first time, they utter the same mournful *cry* to announce his approach, as when they see a fox. It is likewise worthy of remark, that birds utter this peculiar *cry* upon the appearance of all carnivorous animals, as the wolf, the fox, the pine-weasel, the cat, &c.; but never against the stag, the roe, the hare, nor, I believe, even man, who, of all animals, is the greatest destroyer of the inferior tribes.

The language of most birds is a musical language, and reducible by a pitch-pipe to a musical key. All species are not equally eloquent. The language of some species is copious and fluent, but that of others is confined to a few important sounds, which are necessary to express barely their feelings and their wants. But no bird, like the finny tribes, is perfectly mute. The language of birds, Mr WHITE of Selbourne remarks, is very antient, and, like other antient languages, very elliptical. They say little, but much is meant and understood*. *Owls* have a very expressive language.

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* See Nat. Hist. of Selbourne, by the ingenious and Rev. Mr WHITE, p. 240. Of whose observations I have made frequent use.

They *hoot* in a fine vocal sound, which has a considerable resemblance to the human voice. This note seems to express complacency, and sometimes rivalry among the males. They likewise use a quick call, and an horrible scream; and they *screech* and *biss* when they mean to threaten and intimidate. The notes of the *eagle-kind* are shrill and piercing; and, in the season of love, very much diversified. *Ravens*, beside their loud croaks, sometimes exert a deep and solemn note, which makes the woods resound. The amorous sound of a *crow* is strange, and even somewhat ridiculous. In the breeding season, *rooks* make clumsy attempts towards singing. The *parrot-kind*, as remarked in Vol. I. possess a great range of modulation in their voice, as appears by the facility with which they learn to pronounce words, and even short sentences. The *coo* of the pigeon is amorous and mournful. When the male makes love, or is jealous of rivals, he erects his body, raises the feathers of his neck and head, and employs many strutting and lively gesticulations. To these movements he adds a *guttural*, but not unpleasant kind of *speech*, which is soft and alluring when he means to solicit the female. When jealous of a rival, he utters the same notes, but gives them a more sharp, and even a menacing tone. The *woodpecker*, when pleased, sets up a loud and hearty species of *laugh*. The *goat-sucker*, or *fern-owl*, from the dusk till day-break, serenades his mate with *sounds* similar to the clattering of castanets. Most of the small birds, or *passeres*, express their complacency by sweet modulations, and a variety of melodious *sounds*. The *swallow*, by a *shrill alarm*, rouses the attention of his species, and tells them that the hawk approaches. Gregarious and aquatic birds, especially those of the nocturnal kind, who shift their abodes in the dark, are extremely noisy and *loquacious*; as cranes, wild-geese, wild-ducks, &c.

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Their perpetual clamour prevents them from dispersing and losing their companions.

We shall now make a few observations on domestic fowls, whose language is best known, and, of course, best understood. The voice of the peacock, like those of many birds of the finest plumage, is harsh and grating. The braying of asses, or the yelling of cats, are not more disagreeable. The voice of the *goose* clanks and sounds somewhat like a trumpet; but, the *gander*, especially when he apprehends danger to the young brood, joined to his threatening aspect, and the movements of his neck, *hisses* in a manner so formidable as deters the too near approach of children and of small dogs. In the *duck-kind*, the voices of the female and male are remarkably different. The *quack* of the female is loud and sonorous; but the voice of the *drake* is harsh, inward, and feeble. The cock *turkey*, when proud, or when addressing his mistress, blows up his wattles, erects his feathers, makes a humming noise by vibrating his wings, and utters a gobbling kind of *sound*, which, though we cannot describe, is perfectly understood by his own species. When attacked by a boy, or any other adversary, he assumes a pert and petulant tone; and such is the obstinate courage he displays, that he will rather die than give up the contest. A hen *turkey*, when she leads forth her young brood, watches them with the utmost anxiety. If a hawk, or any bird of prey, appear, though very high in the air, the careful and affectionate mother announces the enemy with a 'low inward' kind of *moan*. If he makes a nearer approach, her voice becomes earnest and alarming, and her *outcries* are redoubled both in loudness and frequency. The effects of this interesting *eloquence* upon the young are astonishing. They understand the intimidating language of the mother, though they know not the immediate cause of the

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the danger ; but, by the intuitive knowledge of the meaning of what *she says to them*, they instantly employ every artifice to conceal and protect themselves from the impending danger. To accomplish this purpose, they run under hedges, brush-wood, and even the leaves of cabbages, and of such other plants as happen to be near them.

None of our domestic birds seem to possess such a variety of *expression*, and so copious a *language* as common poultry. A chicken of four or five days old; when held up to a window frequented by flies, immediately seizes its prey, and utters little *twitterings* of complacency ; but, if a bee or a wasp is presented to it, its *notes* instantly become *harsh*, and expressive of disapprobation, and of a sense of danger. When a hen is about to lay an egg, she intimates her feelings by a joyous and soft *note* : But she has no sooner disburdened herself, than she rushes forth with a *clamorous* kind of joy, which the cock and the rest of his mistresses immediately adopt. This tumultuous noise is not confined to the family, or rather seraglio, but is transmitted from yard to yard, and spreads to every homestead within hearing, till at last the whole village is in an uproar. When a hen has hatched a brood, a new and interesting scene is exhibited. Her relation as a mother requires a new species of *language*. She then runs *clucking* and *screaming* about, and seems to be agitated with the greatest anxiety. When men or dogs suddenly approach her feeble brood, her courage and maternal care are astonishing. With loud *cries*, and rapid motions, she assails the enemy ; neither a man, nor a lion, in these circumstances, are sufficient to repress the courage of this unarmed bird. I have seen a hen, when attending her young, boldly attack, intimidate, and beat of a mastiff. The *vocabulary* of the cock is likewise pretty extensive; and his generos-

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fity and gallantry are remarkable : When he discovers a quantity of food, instead of devouring it himself, he instantly *calls* to his concubines to partake of the repast ; and, if he discerns a bird of prey, or any other alarming danger, with a warning *voice*, he desires his family to be on their guard against the common enemy. The cock has also at command his *love speeches*, and his *terms* of defiance. But his most peculiar *sound* is his *crowing*, by which, in all ages, he has distinguished himself as the countryman's clock, as the watchman who proclaims the divisions of the night.

On the subject of our common poultry, I must not omit a curious fact recorded by that intelligent naturalist the Rev. Mr WHITE of Selbourne. A neighbouring gentleman had, one summer, lost most of his chickens by the depredations of a sparrow-hawk, that was in the practice of gliding down between a pile of faggots and the end of his house to the place where the hen-coops stood. The owner, exasperated to see his flock daily diminishing, hung a setting-net between the house and the pile, into which the unwary robber dashed, and was entangled. Resentment suggested retaliation ; he, therefore, clipped the wings of the hawk, cut off his talons, and, after fixing a cork on his bill, threw him down among the brood-hens. Imagination, Mr WHITE remarks, cannot paint the scene that ensued. The *expressions* excited by fear, anger, and resentment, were strange and interesting. The enraged matrons upbraided, execrated, insulted, and, at last, triumphed over the helpless victim ; they never desisted from buffeting their adversary till they had torn him in pieces*.

With regard to *fishes*, they have been always considered as perfectly

* WHITE's Nat. Hist. of Selbourne, p. 243.

fectly devoid of *language*. But, on this subject, it must be remarked, that the element in which they live, their natural timidity, the swiftness of their movements, and a thousand other circumstances, remove them from the accurate inspection and inquiries of men. That they have the organs necessary for hearing, the justly celebrated DR MONRO, in his dissertation on fishes, has demonstrated in the most satisfactory manner. It is likewise well known, that water, which always contains a certain portion of air, is an excellent vehicle of *sound*. It is, therefore, from these two facts, highly presumable, that fishes have some mode of communicating their sensations and desires to one another. To what purpose should Nature have bestowed upon such a numerous class of animals, as that of fishes, organs exquisitely adapted for hearing, unless to endow them with that faculty? And, if fishes hear, it may fairly be concluded, that they occasionally utter *sounds* which are intelligible to their companions. The strong analogy derived from all terrestrial animals is another argument in support of this rational conjecture.

We shall now make a few observations concerning the *language* of *insects*, particularly those of the winged tribes. The *amours* of dragon-flies, of spiders, and of butterflies, furnish many appearances which permit us not to doubt, that the males and females have a very *expressive* mode of conveying their sentiments to each other. Their varied movements, their little alluring arts, are indications of that *language* which all sentient beings possess in some degree, and the *signs* of which are seldom equivocal. We see the male soliciting, by his gambols, his caresses, and his perseverance, favours which the female affects, at first, to refuse, with no other apparent intention than to excite and inflame the passion of the male.

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The *grasshopper* furnishes us with a remarkable instance of the *language* of insects. The grasshopper is a species of *ventriloquist*. The organs of his voice, which are both curious and complicated, instead of his head, are placed in his *belly*. By this instrument, in the season of love, he *chants*, or *chirps*, to the female, who seems to be pleased with his addresses, and, when disposed, she approaches him, being led, not by the eye, but by his *voice*. From a very general analogy, we are warranted to suppose that organs of *voice* imply the relative organs of *bearing*. Hence we may conclude, that the female grasshopper both hears and understands the *love-speeches* of the male.

Those insects which are brought forth, and live in society, who mutually assist each other in constructing works for the common good and accommodation, seem to have the greatest need of an extensive *language*. Being destined to form one large family, to give mutual aid and support to each other in all their common wants and operations, a species of *language*, and that not very limited, seems to be absolutely necessary to enable them to understand and to execute the different labours allotted to them with that regularity and harmony, which is so remarkable in the magnificent structures erected by bees, wasps, and many other gregarious insects. Bees, as well as flies of every kind, make a humming *noise* by the vibrations of their wings. But the noise of the bee, when flying home with its load, is very different, even to our comparatively blunt ears, from that which it utters after arriving at the hive, where it makes a peculiar *noise*, which is perfectly understood by the working bees, who instantly come and carry off this fresh supply of materials.

Common flies, and particularly the large flesh-flies, make a soft

singing kind of noise when flying about in tranquillity. But, when alarmed, or when entangled in the web of a spider, the *noise* of their wings intimates distress and terror. Instead of being soft and agreeable, it is then loud, quick, harsh, and interrupted, precisely analogous to the language and cries of men and of the larger animals when placed in similar circumstances. In my former volume, when treating of *bearing*, I have rendered it more than probable, that the common house-fly is endowed with the faculty of hearing. Whenever we perceive, that effects and movements are uniformly produced by certain sounds, it may be concluded, that the animal is furnished with organs of hearing, though, from their minuteness, we are unable to discover where they are situated. In the winged tribes of insects, it is probable that the organs of hearing are placed near the insertion of the wings, or, at least, that nerves or vessels proceed from the wings to the more immediate organs of hearing, which may be inclosed under that elastic crustaceous substance with which the head is covered. This idea will be rendered still more probable by attending to the various modulations of *sounds* produced by the vibrations of the wings, and by comparing these with the present situation and employment of the insect. When a common fly is irritated or terrified, the *noise* made by the vibrations of its wings is very different from that produced when the animal is flying about undisturbed. When a house or a flesh-fly is tormented by thoughtless children, who, for amusement, often insert pretty large pins into the bodies of these insects, which the animals, with much pain, are obliged to trail after them, the *noise* of their wings is then highly expressive of impatience and of torture. But, when they meet with food agreeable to their taste, the *noise* of their wings is soft, gentle, and even melodious. When the season of their amours arrives, a new and interesting scene, both with regard to movements and

language,

language, is exhibited. At that important period of their existence, they assemble in groups, which are more or less numerous, according to circumstances. These groups fly about, making a thousand circumgyrations, but always keep pretty close to each other. In these *love-dances*, as I call them, the males and females often meet, and lay hold of each other in the air; but the congress is only momentary. The *noise* of their wings, however, on this critical occasion, is brisk, sharp, and seemingly expressive of *joy*: This *noise* is easily distinguishable from that excited by terror or by any embarrassing or painful situation. But these groups of lovers not unfrequently descend from the higher parts of a chamber, and alight upon tables or chairs. Here their *language* and motions become still more intelligible. The males run about with ardour in quest of the females, and perch with alacrity and a pleasant murmuring species of *noise* upon the backs of the females, where, if their stay is short, it is amply repaid by the frequency of reiteration. I have often been amused with their mistakes. Though the eyes of flies consist of numerous lenses, so situated that they can see objects all around them; yet these lenses are so minute and so convex, that they can perceive objects at small distances only. When the males are roaming about in quest of females, it not unfrequently happens, in the keenness of research, that two males rencounter: As soon as the mutual mistake is perceived, each makes a sudden *snapping* kind of *noise*, as if they were spitting in one another's faces, and then run off in pursuit of more suitable mates.

Some spiders, when they wish to have sensual intercourse, have a singular method of communicating their desires. A spider, who wants a mate, has a mode of *striking* against the wall or wood where she has settled. She first gives nine or ten gentle blows, re-

fembling, but somewhat quicker and louder, the vibrations of a watch ; after which, she remains some time silent, as if waiting for a response ; if she receives none, she repeats the same *ticking noise*, by what means it is not perfectly known, at intervals of about an hour or two, resuming this exercise and resting alternately both during the day and the night. After these amorous *solicitations* have been continued two or three days, if no lover makes his addressee, probably because none are within the reach of hearing, she changes her situation, till she receives an answer from a neighbouring mate, who makes precisely the same kind of *noise*. If they are mutually pleased with each other, the *conversation* becomes brisker, and the beatings more frequent, till, at last, the approach is so near, that the two *sounds* are confounded. In a very short time, a deep silence takes place, when it is reasonably supposed that the intentions of Nature are accomplishing*.

This chapter shall be concluded with a few general remarks. With regard to the *language* of beasts, a few examples have been selected from

* Amusement philosophique sur le langage des Bestes, par G. H. Boujeant, p. 118. Father Boujeant, as appears from his writings, was a man of considerable learning and ingenuity. He was also an acute observer of the operations and oeconomy of Nature. He supported his ideas, concerning the relative *understanding* and *language* of *beasts*, with great spirit and ability. But fanatical, or, which is the same thing, ignorant individuals, and, at last, the *Romish church*, were alarmed. Boujeant was himself a Jesuit ; and, when called to account for his doctrine, like a gentleman of the profession, in a second edition, he not only *recanted* solemnly all his opinions on the subject, but acknowledged them to have been *delusions of the Devil* ! To augment this literary, or rather *religious* farce, the very same opinions and reasonings are repeated in the subsequent edition, accompanied with the signed *recantation* of the author ! The diffusion of science, so often attempted to be suffocated by *priests*, though, to the disgrace of human nature, both an antient and a modern practice, exhibits a dreadful picture of what are called *the Lords of the Creation* !

from the four great classes of Quadrupeds, Birds, Fishes, and Insects. To have enumerated more, would not only have tired the reader, but led me far beyond my intended limits. From the few specimens I have given, it is apparent, that Nature, in this, as well as in every other of her operations, supports and conducts her system of animation by universal and intelligent laws. On man she has bestowed three species of language, namely, *natural* language, the language of *gesture*, and, what is still superior, the faculty of inventing and employing *artificial* language. But the most distinguished of the brute animals are limited solely to the two former modes of communicating to each other their various feelings and desires. The *language* of the insect tribes seems to be still more limited. Their *conversation* is chiefly carried on by various vibrations of their wings, and by similar instruments; but still these simple modes of expression, by whatever motives they are produced, are perfectly understood, which is the sole end and intention of all *language*.

One very singular observation remains to be made. Contrary to what almost universally takes place in the human species, the *females* of the inferior animals are not so *loquacious* as the *males*. This remarkable difference, if we scrutinize impartially the intentions of Nature, will be found, like all her other intentions, to be productive of the wisest and most beneficent purposes. Among those brute animals who *pair* or *marry* by mutual selection, and particularly almost the whole of the feathered tribes, when not corrupted by domestication, the *language* of the *males* is more extensive and more frequently repeated, than that of the *females*. It is for this reason, that, in purchasing singing birds, great attention is paid to those characters which distinguish the *males* from the *females*, the latter being considered as comparatively *mute* and *useless*. When the female thrush,

or blackbird, is brooding over her eggs; the male sits upon a neighbouring tree; and, when no danger appears, he tells her, in melodious and encouraging strains, not to be afraid, because he is keeping the strictest watch. But when he perceives the too near approach of man, of birds of prey, or of any other rapacious animals, he instantly changes his addresses to her. Instead of his former soothing notes, he flies from branch to branch, or from tree to tree, uttering dismal, alarming, and harsh *cries*. In this manner he tells her to beware of the enemy. When the danger is greatly increased, by a still nearer approach, the male again changes his *language*: He then, by quick and precipitate *sounds*, commands her to *fly*, and to save herself even in preference to her eggs or her defenceless brood.

Here the intentions of Nature as well as the necessity of a varied though limited *language*, are evident both to our ears and eyes; for, on such occasions, the *sounds* are uniformly accompanied with the most expressive *gestures*. When boys are about to carry off a nest of young birds, both parents, notwithstanding their natural dread of man, which is too often augmented by cruelty, make a much nearer approach than at any other time. Their almost invincible attachment to their offspring seems, in a great measure, to deprive them of the principle of self-preservation. Their *cries* are low, mournful, and not unfrequently resemble those uttered by human beings when placed in similar circumstances. But, when despair removes all hope, another change of *language* is exhibited. Both parents then fly round the assailant, screaming and uttering threatening cries; and sometimes they even attempt to repel the spoiler.

When a boy, I carried off a nest of young sparrows about a mile from my place of residence. After the nest was completely removed, and
while

while I was marching home with them in triumph, I perceived, with some degree of astonishment, both parents following me, at some distance, and observing my motions in perfect silence. A thought then struck me, that they might follow me home, and feed the young according to their usual manner. When just entering the door, I held up the nest, and made the young utter the *cry* which is expressive of the desire of food. I immediately put the nest and the young in the corner of a wire-cage, and placed it on the outside of a window. I chose a situation in the room where I could perceive all that should happen, without myself being seen. The young animals soon *cried* for food. In a short time, both parents, who understood the language as well as the peculiar *voices* of their mutual offspring, having their bills filled with small caterpillars, resorted to the cage, and after *chattering* a little, as we would do with a friend through the lattice of a prison, gave a small worm to each individual. This parental intercourse continued regularly for some time, till the young were completely fledged, and had acquired a considerable degree of strength. I then took one of the strongest of them, and placed him on the outside of the cage, in order to observe the conduct of the parents after one of their offspring was emancipated. In a few minutes, both parents arrived, loaded, as usual, with food. They no sooner perceived that one of their children had escaped from prison, than they fluttered about and made a thousand *noisy* demonstrations of *joy* both with their wings and their *voices*. These tumultuous *expressions* of unexpected happiness at last gave place to a more calm and soothing *conversation*. By their *voices* and their *movements*, it was evident that they earnestly entreated him to follow them, and to fly from his present dangerous state. He seemed to be impatient to obey their mandates; but, by his *gestures* and the feeble *sounds* he uttered, he plainly told them

that

that he was afraid to try an exertion he had never before attempted. They, however, incessantly repeated their *solicitations*; by flying alternately from the cage to a neighbouring chimney top, they endeavoured to show him how easy the journey was to be accomplished. He at last committed himself to the air, and landed in safety. Upon his arrival another scene of clamorous and active joy was exhibited. Next day, I repeated the same experiment by exposing another of the young on the top of the cage. I observed the same conduct with regard to the remainder of the brood, which consisted of four. I need hardly add, that not one, either of the parents or children, ever afterwards revisited the execrated cage.

We have already seen, and every body knows, that in general, the *males* of the inferior animals are more *loquacious* than the *females*. But, in the human species, it is likewise an unquestionable fact, that the *females* are much more talkative than the *males*. It is even remarkable, that *female* children, though of the same family, and receiving the same instructions and example, acquire the faculty of *speaking* one year, and sometimes two, sooner than the *males*.

We shall now endeavour to investigate the intentions of Nature in creating such a marked distinction.

In all ages, and in all regions of the earth, the early education and management of children have necessarily devolved upon the mothers. For this important task, they are much better qualified, both in the structure of their bodies, and in the dispositions of their minds, than the males. The connection between the mother and child begins long before it becomes an object of attention to the father. By a thousand circumstances, which mothers only know, and
sometimes

sometimes attempt, though obscurely, to describe, they contract an affection for a still invisible being. After the child is ushered into the world, the curiosity and the sympathetic joy of the father, are excited. He, accordingly, exerts himself to render the condition both of the mother and child as happy as possible. To support the child with a mild but nutritive food secreted from the blood and other juices of the mother, Nature has provided her with a wonderfully complicated system of vessels, or lacteal pipes, which all terminate in the nipples of her breasts. To these nipples the infants instinctively apply their mouths, and, by suction, create a vacuum. The pressure of the external air upon the breast, or collection of tubes filled with milk, forces them to discharge their contents into the mouth of the child, who continues to swallow it till its stomach is satisfied. During this tender and precarious state of existence, the anxious and persevering attention of the mother, makes her cheerfully endure many toils and hardships, under which she would often sink, were she not, on such occasions, almost preternaturally supported by mere strength of affection.

After the child has arrived at the age of two or three months, and, in strong and healthy children, much earlier, or as soon as it is capable of giving a transient attention to particular objects, then the exertions of the mother are almost perpetual. Her sole object is to please by little amusements which she endeavours to accommodate to the weak, but gradually augmenting capacity of the infant. The chief instruments which she addresses are the *eyes* and *ears*. To the *eye* she presents shining or luminous objects with which children are very early delighted; and, at the same time, repeatedly mentions the *names* of the particular objects. Thus, by habit, the *natural volubility* of female tongues is greatly improved. I have

often been amazed at the dexterity and quickness of mothers and nurses when endeavouring to please fretful children. They hurry the child from object to object, in order to discover if any of them arrests its *eye*. If this attempt does not succeed, they have recourse to other expedients. The *ears* of all infants are delighted with any loud *noise*. The mother, who wishes to appease the fretfulness, or even to keep up the spirit and cheerfulness of the child, tosses it about in her arms, sings, and talks alternately ; and, on such occasions, it is astonishing to observe the quickness of her transitions from one species of incomprehensible jargon to another. Still, however, she goes on either *rattling* with her *tongue*, or making a *rattling noise* on tables, chairs, &c. A person who had never attended to these scenes, which are so often exhibited by a sprightly mother and a sprightly child, would be apt to conclude, that both were proper inmates for a bedlam. These are well known to be universal facts ; and we shall now endeavour to show their utility.

It is a very antient adage, that Nature does nothing in vain. To women she has given the talent of talking more frequently, as well as more fluently, than men : She has likewise endowed them with a greater quantity of animation, or what is commonly called *animal spirits*. Why, it may be asked, has Nature, in this article, so eminently distinguished women from men ? For the best and wisest of purposes. The principal destination of all women is to be mothers. Hence some qualities peculiar to such a destination must necessarily have been bestowed upon them. These qualities are numerous : A superiour degree of patience, of affection, of minute, but useful attentions, joined to a facility of almost incessant *speaking*.

Here, however, I must confine my observations to the last conspicuous

cuous and eminent accomplishment. To be occupied with laborious offices, which demand either bodily or mental exertions, and not unfrequently both, is allotted to the men. These causes, beside their comparative natural taciturnity, totally incapacitates them for that loquacity which is requisite for amusing and teaching young children to *speak*. But the employments of women are of a more domestic kind. Household affairs, and particularly the nursing and training of children, are fully sufficient to engross their attention, and to call forth all their ingenuity and active powers. The *loquacity* of women is too often considered, by poets, historians, and by unthinking men, as a reproach upon the sex. Men of this description know not what they say. When they blame women for *speaking much*, they blame Nature for one of her wisest institutions. Women *speak much*. They ought to *speak much*. Nature compels them to *speak much*; and, when they do so, they are complying religiously with one of her most sacred and useful laws. It may be said, that *some men* talk as *much* as women. Granted. But beings of this kind, I deny to be *men*. Nature seems to have originally meant them to be *women*; but, by some cross-accident, as happens in the production of *monsters*, the external *male form* has been superinduced upon a *female stock*.

CHAPTER VIII.

Some Remarks on the Comparative Pleasures and Sufferings of Animals.

THERE are two great sources of animal pleasure and pain. The one arises from *mental*, and the other from *corporeal* causes. In proportion to the extent of intellectual powers in animals, the variety and the intenseness of their pleasures must be augmented. I wish the reverse were not equally true. Man, who stands at the head of all the animated beings of which we have any knowledge, derives the most extensive, variegated, and delicate species of pleasure from natural genius, especially when improved and illuminated by science, by literature, and by impartial, but acute observation. The means, however, of acquiring these accomplishments, are often productive of the greatest human *calamities*. They cannot be attained without much study and reading. But study and reading imply a sedentary life; and a sedentary life gives rise to consumptions, to the stone, to the gout, to want of appetite, and, of course, to every evil which hell can invent, or poor mortals suffer.

But

But let us take a view of the enjoyments procured by the acquisition of knowledge, and by a proper culture of the mind. Every step we advance, from the very commencement of our progress, affords pleasures which are totally unknown, and even incomprehensible to the ignorant and too commonly vicious part of mankind, which unfortunately includes much more than nine-tenths of the species.

When about five or six years of age, our sole delight consists of rambling about, flying from one external object to another with often an unmeaning rapidity, and without perceiving, that, by this restless activity, we are laying up ample stores for future reflection. Nature, in her operations, has seldom one intention only in view : While she is thus early stimulating us to gratify curiosity, or, in other words, to enjoy pleasures which are perpetually changing their forms and modes of impression upon the soft and ductile mind, she is, at the same time, extending and strengthening the body by the movements which these exertions necessarily require. The pleasures resulting from the acquisition of ideas by the inspection and examination of new external objects, from the age mentioned above, proceed with amazing rapidity. But, after this period, in what are called *civilized*, or rather *artificial* societies, the natural current of the mind is checked, and turned into very different channels. To read, to write, to acquire *dead* or *foreign languages* ; and, if the destination be still higher, geometry, and speculative knowledge of every species, are made the principal objects of a young man's attention. This severe check is, in general, too early given. At the very time when young minds are eagerly investigating even the *minutiæ* of Nature, as insects, reptiles, and, when a little farther advanced, birds and quadrupeds of different

different species, they are prematurely hurried on, to the most absurd and preposterous of all studies, namely, that of *dead* and *foreign languages*, long before they understand, to any extent, their *native tongue*.

Some small portions of the antient *historical* compositions may sometimes be partially understood, and even relished by school-boys. But what are the sentiments which strike in the most forcible manner the unsuspicious, and, as yet, uninformed minds. They are of the most diabolical kind. *Animosity, battles, treachery, cruelty, and murders!* The successful perpetrators of these horrid crimes are celebrated, both by their own *historians*, and by unthinking *pedagogues*, under the grand appellation of *HEROES!* What was the renowned *Alexander?* A *great Hero?* And what is a *great Hero?* An unrelenting *butcher* of his own *species!* Such was *ALEXANDER*, such was *CÆSAR*, and such were all *the similar vagabonds, thieves, and murderers* of antiquity. These men, however, are exhibited by our *teachers*, as glorious examples of human *virtues!* What monstrous *lessons* to young and tender minds! But, if our *teachers* were wiser than they generally are, the historical compositions of the antients would afford them the finest topics for inculcating every species of moral duty, and of moral feeling, upon the minds of youth. Patriotism, love of liberty, and bravery in the defence of the natural rights of man, when tempered with moderation and humanity, and, if properly explained, enforced, and illustrated by the numerous and splendid characters which antiquity occasionally affords, would not only excite attention, but expand the mind, and give it virtuous impressions which no time could ever efface.

I mean not to depreciate *classical learning*. I only complain of a most absurd and hurtful mode of education, which is, it may be said, *universal* in Scotland. Not to mention the *masters* of different mechanical employments, *JOURNEMEN shoemakers, tailors, weavers, carpenters, bakers, masons, bricklayers, &c.* uniformly send their children, when at the age of seven or nine, for the space of four or five years to learn *Latin* at *grammar schools*! During this time, the poor boys are forced to attend the school, and not unfrequently whipped into the repetition of some *Latin vocables*, which are never to be of any use to them during life. For, after performing this, to them, useless, painful, and dreary task, the thread is instantly cut, and they are hurried into apprenticeships, and, of course, into the business of life, without understanding either their *own*, or any other *language*. The progress of Nature may, it is true, be sometimes checked, but never entirely stopped. During the hours of recess from scholastic discipline, she resumes her empire, and by her irresistible power, obliges the children to frisk and romp about, and to enjoy those various and pure pleasures which result from activity and amusement. But, these enjoyments are no sooner over, than the abhorred ideas of unnatural confinement, and of a constrained attention to *jargon*, which, to them, is completely unintelligible, instantly recur, and harass and terrify their imaginations.

I have hitherto limited my remarks to *languages* alone. But, with regard to sentiment, the motely *chaos* becomes doubly *dark*. Of battering rams, spears, swords, shields, and other warlike instruments, some idea may be formed. But the political views of commanders, the various marches and counter marches of armies, of detached parties for the purposes of foraging, or of observing the motions and probable intentions of the enemy, and the means employed to render

der these intentions abortive, must be perfectly incomprehensible to school-boys, who do not know one inch of the countries where such operations are transacting. It will be said, perhaps, that all these difficulties may be obviated by proper *maps* and descriptions. To young men farther advanced in years, and who are destined to some learned profession, or to the education which every gentleman ought to receive, *maps* and descriptions are excellent sources of information. But, to school-boys, at the age I speak of, *maps* and descriptions convey no ideas of the countries they are intended to represent. *Globes*, it may be thought, will remove all objections of this kind. *Globes*, however, only augment the obscurities arising from *maps*, when attempted to be thus prematurely obtruded upon minds totally incapable of understanding the principles upon which either of them are constructed. The names of countries, of some rivers, and chief towns, like *Latin vocables*, may, by the mere exertions of memory, and of perseverance, be mandated, and repeated, as the words and short sentences which *parrots* are taught to express. But, by these exercises, no new ideas are acquired; nor are those which may have formerly been in some measure acquired, either illustrated or expanded. The *fruitless* and *painful* labours, however, which such preposterous conduct in managing the early education of youth produce, are immense, and truly ridiculous.

These and similar observations relate principally to *prose* compositions. But, what are we to say of *poetry*, the language of which is highly *figurative*, and the *sentiments* and allusions are derived from every object of nature and of art, which can strike the imagination of the poet? To read such works of genius and of learning with any degree of intelligence, often baffles the experience, the industry, and the abilities of our most acute commentators. This remark is appli-

cable, in part, to every species of poetry, but acquires a redoubled force with regard to that species called *epic*. Beside the various descriptions and allusions derived from natural and artificial objects, what goes under the strange appellation of *machinery*, is almost perpetually introduced. Not contented with *heroes* and brave *men*, in describing battles and human exertions, *gods* or *devils* must interfere in every hostile contest. In the Heathen mythology, the number of gods and goddesses is as infinite as their attributes and destinations. Every nation, every town, every mountain, every river, and many principal families, and even individuals, were supposed to be the favourites of particular divinities, by whom they were superintended, and protected, on all critical emergencies, from danger and death. When two heroes met and commenced a furious combat, if one of them was about to fall, to prevent the deadly blow, a *god* or *goddess* instantly stepped forward to his assistance, and, by some silly or absurd miracle, saved him from impending destruction ! BUTLER, that prince of humour and of wit, ridicules, in the finest strains, the *machinery* employed by ancient as well as modern poets. When two of his renowned heroes were about to engage, not with swords, but with fire-arms, in the moment of danger, he makes PALLAS interpose to save her favourite, in the following ludicrous manner :

But PALLAS came in shape of *rust*,
 And 'twixt the spring and hammer thrust
 Her *Gorgon* shield, which made the *cock*
 Stand *stiff*, as 'twere transformed to *stock* *.

The splendid and beautiful descriptions of many natural objects are not more intelligible to mere boys than the machinery of *gods*, of *goddesses*, of *angels*, or of *devils*. *Amaranthine* bowers, *myrtle* groves,

* Hudibras, canto 2. line 781.

groves, tombs covered with the dismal *cypress*, crowns of *laurel*, the deadly *nightshade*, the *cedar* of Lebanon, and a thousand similar names of objects, are equally unknown to the *master*, to the *school-boy*, and often to the very *poets* who use them in their compositions. When the names and descriptions of plants happen to occur in the reading either of prose or verse, it would be no difficult task, particularly in the seminaries of Edinburgh, where we have one of the most extensive and best replenished *botanic* gardens in Britain, for *masters* to procure *specimens* of almost every vegetable that is mentioned by the historians and poets of antiquity. A single inspection of such specimens would elucidate many passages in classical authors more completely than all the definitions which human ingenuity can invent. Besides, this mode of explaining particular parts of the Classics would have another happy effect. It would not only give immediate pleasure to boys, but create a habit of attention to the productions of Nature with which we are perpetually surrounded, and perpetually overlook.

But, say our *pedagogues*, for an explanation of all such generic or specific names, consult your *dictionary*. We shall do so; and take a few examples from that of *Ainsworth*. AMARANTHUS, *everlasting, a flower which never fadeth!* CUPRESSUS, *a cypress-tree!* MYRTUS, *a myrtle-tree!* LAURUS, *the laurel or bay-tree!* CIRCÆA, *the herb called nightshade!* MORUS, *a mulberry-tree!* MERCURIALIS, *the herb called Mercury!* MESPILUS, *a medlar-tree!* MANDRAGORAS, *an herb called mandrake!* MENTHA, *the herb called mint!* AMYGDALA, *an almond-tree!* PLANTAGO, *plantain!* LEUCOGRAPHIS, *an herb good for those who spit blood!* I will not disturb my readers with more specimens of similar unmeaning explanations,

or rather no *explanation* at all ; for they convey no ideas whatever. In almost every page of our common dictionaries, whether Latin, English, French, &c. examples of such *jargon* are to be found. Our Lexicographers, however, not unfrequently descend still lower, and, instead of absurd definitions, or substituting English for Latin names, in which they are likewise *often* wrong, content themselves with barely saying, the *name* of a *tree* ! the *name* of a *plant* ! the *name* of an *herb* ! the *name* of a *precious stone* ! the name of a *four-footed beast* ! &c.

Are these the sources from which *boys*, or even *men*, are to derive information concerning the productions of Nature ? But, it is much to be lamented, that, in general, our *pedagogues* themselves are unqualified to use the proper resources, and, consequently, must be equally ignorant as the pupils they are attempting to instruct. To boys the task of learning dead languages is sufficiently hard and laborious. But, when ordered to read passages where natural objects of various kinds frequently occur, in the explication of which neither their *dictionaries* nor their *masters* can afford the smallest assistance, the *drudgery* of groping in the *dark* becomes often so *painful*, that many boys leave the school perfectly *disgusted*, and drop for-ever such unprofitable, and, to them, unintelligible studies.

But, notwithstanding these, in particular instances, perhaps unavoidable *difficulties*, when somewhat farther advanced in years, if young men, by persevering industry, joined to a partial knowledge of some branches of science, are ~~once~~ enabled to read and to relish the writings of ancient or of foreign authors, then the *pleasures* resulting from the perusal of them more than counterbalance the *pains* suffered in the acquisition of that species of knowledge. Some of
the

the above remarks are equally applicable to the study of science and of art. But, as the principles of the arts and sciences are fixed, and seldom subject to cavil or misrepresentation, whenever these simple and natural principles are properly explained and understood, the *pleasures* arising from their application are very great. As formerly remarked, premature *studies* are uniformly *painful*; because such young minds are incapable of comprehending the principles, and far less the application of them to arts or science. *Grammar*, the first science obtruded upon, I may say, *infantine* intellects, is one of the most abstract and intricate. To attain even a tolerable knowledge of grammar, whatever be the language, (for the general principles are, and must be the same,) presupposes a considerable range of intuitive facts, as well as of acquired ideas.

When these difficulties, however, are once surmounted, and the mind is enabled to perceive the beauties and the utility of science, its *happiness*, which it hourly receives from a thousand sources, may be said, as far as our present condition admits, to be complete. But a mind thus cultivated is by no means *satisfied*. Every new acquisition, though attended with *pleasure*, produces, at the same time, a number of *painful* sensations. In proportion as the mind is expanded by different kinds of science, its desire for farther and often impossible acquisitions augments, and gives rise to *painful* anxieties, which not unfrequently terminate in *dejection*, which is a species of *madness*.

We shall now trace the progress and feelings of a well informed mind, after it has engaged in the more serious and interesting affairs of society. Here a preliminary remark must be made. The more the mind has been stored with a variety of knowledge, the
more

more *acute* are its *feelings*. It derives *pleasure* from many sources, of which the *vulgar* can have no idea. But, mark the reverse. The causes of *pain* augment in more than a quadruple proportion. Of most of these the *vulgar* have not a conception ; but they *torture* the feelings of what are called *refined minds*.

Business, of one kind or another, now becomes necessary ; and an almost infinite series of *pains* and of *pleasures* are the unavoidable results. Mental or corporeal exertions, however laborious, we shall not consider as absolutely *painful* ; for when these are past, and followed with success, they are causes of the greatest *pleasures*. At this period of life, another source of *pleasure*, as well as of *pain*, arises in an unexpected, and often involuntary manner. Both in the male and female sex, peculiar and strong attachments are formed. Marriage, in general, is the consequence of such attachments : But, with regard to the present subject, what are the common consequences of marriage ? *Children*, and a multitude of new *pleasures* and *pains*. When in health, the *pleasures* afforded by children are numerous and delightful ; but, when *disease* comes, the account is more than balanced. A helpless infant tortured with *pain* is a most *excruciating* object. But, when a lovely child is, perhaps, suddenly torn from its mother's breast by *death*, the *painful* sensations excited by such an event, *parents* alone can know. To proceed : When children have happily got over the common diseases incident to that critical period of life, and have advanced to manhood, and engaged in different occupations, the *anxieties* of parents, instead of being *blunted*, become more *acute*. They then look forward, with redoubled *apprehension* and *affection*, to the probable success or misfortunes of their offspring. When successful, the *pleasure* is great. But when, from negligence and vice, or even from unforeseen misfortune,

tune,

tune, a contrary event takes place, the *painful* feelings of parents are not to be described. Parents not unfrequently, from a natural, but superabundant affection, risk more than their fortune with a view to bring their children respectably forward in the world, and to render them happy. Such conduct is foolish; but the folly is amiable. A single slip, however, in children too frequently produces the greatest *misery* to both them and their parents. In all such cases, contrary to the common adage, *evil comes out of good*.

We have hitherto given slight sketches of the *pains* and *pleasures* arising from highly *cultivated* minds; and shall now descend to what are called the *vulgar* and uninformed.

The *vulgar*, in all nations and conditions of society, constitute the great body of the human race. Born and brought up by poor and ignorant parents, their children, of necessity, are excluded from every source of superior knowledge. These seemingly unfortunate circumstances, it should appear, would be productive of the greatest *misery*. But Nature, ever attentive to the general *happiness* of her productions, has decreed that the *vulgar* should, at least, be as *happy* as the *learned*. They are excluded from many sources of real *pleasure* which the learned possess. But they know nothing of such defects; and what they do not know cannot possibly give them *uneasiness*. They labour with cheerfulness, and eat their food with an appetite which no riches can purchase. Every moderate animal *enjoyment* is within their reach; and their rank in society precludes them from many *painful* circumstances which opulence alone can procure. Their sleep is sound and refreshing; and, as their food is generally light and easily digested, they are seldom troubled with those *disagreeable dreams* which *torment* the luxurious, whose stomachs

machs are not only feeble, but often overloaded with *dainties*, and still oftener with *intoxicating liquors*. The vulgar are not *barrassed* with ambition, nor anxiously solicitous concerning *future* prospects or *future* events. They *enjoy* the present moments as they fly, and *rely* upon the continuance of similar sources of happiness.

In their domestic affairs, the *vulgar* are exempted from many *evils* which too frequently *perplex* the imagination, and *hurt* the feelings of those who occupy the higher stations of life. Of the many *vexatious* circumstances arising from the *negligence*, the *petulance*, the *thefts*, and the long train of *vices* daily committed by *servants*, the *vulgar* can never form an *idea*, and, of course, cannot *feel* the *uneasinesses* which they occasion. The *vulgar* are likewise exempted from a thousand *restraints* and ceremonious *etiquettes*, which cramp the *freedom*, occupy fruitlessly the *attention*, and give rise to numberless *anxieties* and *disappointments* among what are called *people of fashion*. The *pleasures* of the *vulgar*, though comparatively few, are more genuine and unadulterated, because they are less *artificial*, and, of course, unaccompanied with *emulation* or *jealousy*, and seldom followed with *regret* or mental *reproach*. The *pleasures* of the *great* are generally tumultuary, exhaust the spirits, and produce *languor* and *compunction*, two painful feelings which mutually augment each other.

Upon the whole, to men of observation and reflection, it must be apparent, that the laborious *pleasures* of the *vulgar* are superior to the *luxurious*, and, I may say, *painful pleasures* of the *learned* and *opulent*.

Proceeding on our plan, we shall next consider the condition of what are called *brute animals* with regard to *pleasure* and *pain*.

Brutes

Brutes are exempted from a thousand sources of *pain* which afflict even the *vulgar* of the human species. Brutes have not an idea of *futurity*; but they *enjoy* every moment of their existence, which, though, in most of them, not so long protracted as that of man, is, in general, a continued series of *pleasures*. I speak not of those animals, or rather slaves, called *domestic*; for these, to the disgrace of the human species, are too often overloaded, beat, starved, and maltreated in a shocking manner; but I speak of animals in that state which the God of Nature formed them.

The absence of *pain* is certainly a species of *pleasure*. When nothing *hurts* either the *body* or the *mind*, *pleasing* sensations must necessarily follow. The mere consciousness of existence is *pleasure*. If brute animals are excluded from the *pleasures* of *imagination*, they are, at the same time, exempted from innumerable *tortures* to which it gives rise. Many of them, wherever they stroll, find their natural food under their feet. Others, of a more rapacious kind, are obliged to hunt for their subsistence. Their food, of course, is more precarious. But Nature has endowed them with the faculty of sustaining, with impunity, long abstinence. She has likewise bestowed upon them courage, artifice, patience, and alacrity both in attack and defence.

With regard to bodily *pain*, arising either from disease or external injury, the *brute* must suffer as much as the *man*. Brutes, however, though they *suffer* from these causes, are not *tormented*, like man, with the *terrors* of their consequences. They have not a conception of *death*, far less of *future* existence, and, what is infinitely worse, of *eternal* and excruciating *torture*. But, to many of mankind, these are perpetual sources of *misery* and of *terror*.

Hitherto I have been talking of the comparative *pains* and *pleasures* of the larger animals. I shall now hazard a few remarks with regard to the condition of the more minute tribes.

Insects are animated beings as well as men and quadrupeds. But it is extremely difficult to form proper ideas of their pains or pleasures. If we may judge, however, from the quickness and vivacity of all *winged* insects, we should reasonably conclude that every instant of their existence is attended with *pleasure*. Their lives, especially in their fly-state, is short; but, as a recompense, it is all *enjoyment*. They have their food, it is true, to search for and procure; but, from the instruments which Nature has conferred upon them, they are enabled to extract nourishment from almost every vegetable and animal substance, and even from the earth and waters. In quest of food, or of their proper mates, they are perpetually *active*; and *activity* itself is one of the principal sources of *animal happiness*. When *man*, whatever be the cause, loses the springs of *activity*, from that moment he is *miserable*. It is not unnatural, therefore, to conclude, that, whenever we see *activity* in the inferior animals, *happiness* must be the consequence.

The motions of those *insects* which are not furnished with wings are comparatively slow and languid; but we are not, from this circumstance, warranted to infer that they are more *unhappy* than the winged tribes. Motion, whether quick or slow, requires *exertion*, and that exertion is not only *pleasant*, but productive of vigour and of health. Still, however, when we consult our own feelings, we are necessarily led to think, that the most *active* animals are the most *happy*. In the human species, an *active* mind *enjoys* life more completely than the *indolent* and *sluggish*. *Sloth*, or the absence of *activity*, is
real

real *pain*. But slow motion, in some of the insect tribes, does not imply *inactivity*; because, from their frame, that slowness of movement requires, perhaps, even greater *exertions* than the rapid motions of other species.

The sluggish motion of earth-worms, and of snails, may, to us, seem to indicate great *labour*, and even *pain*. But, it should be considered, that, if their movements are comparatively slow, their travels are proportionably short; for their food is almost perpetually before them.

The great multiplicity of insects, both in species and individuals, is often attended with no small injury to man as well as to many other animals. As a counterpoise, however, their enemies are innumerable. Myriads of birds, &c. daily devour ten thousand times the number of *insects*, both of the winged and reptile kinds. A bird, in an instant of time, swallows a fly; and, in the same instant, its life is extinguished, without feeling, perhaps, a single *pang*.

This subject shall be dismissed with a few remarks. From the facts and observations related above, it seems to be apparent, that Nature, through the whole of her *animated* productions, has distributed her *pleasures* and her *pains* in an equitable manner. If man and the larger animals are occasionally subjected to a greater number of diseases than the smaller tribes, their lives are, in general, protracted to a much longer space; and, of course, the *quantity* of their *enjoyment* is increased. Some species of birds, as eagles, parrots, &c. beside the *pleasures* arising from their natural *activity*, are very long-lived. Most of the small birds, though they live not so long, are still more *active*; and, of consequence, their *happiness* is proportionably augmented. The

lives of most insects are very short ; but their *active enjoyments*, during their existence, are almost perpetual. Thus, animals of every denomination appear to have nearly an equal portion of *happiness* and of *pain* bestowed upon them by the beneficent institutions of Nature. Even *pain* itself is no inconsiderable cause of *pleasure* ; for, when abated or entirely removed, the *pleasures* arising from these fortunate circumstances are immense.

C H A P.

CHAPTER IX.

Of Poisonous Animals.

POISON, it ought to be remarked, is a relative term. Substances which are deleterious or hurtful to one species of animals, afford the most salutary food to others. The bite of the common viper is very poisonous, and its effects are various to man, as well as to many other animals. But broth made of vipers is often prescribed by physicians in cases of consumption and of general weakness. I suppose, however, that the heads, which are the chief, or rather the only receptacles of the poison, are cut off before the animals are boiled; for FONTANA, that justly celebrated Naturalist, who made more experiments upon the nature and effects of poisons than any man either before or after his time, has shown, that the venomous liquid, even when taken into the stomach, and without the intervention of any wound, is extremely dangerous and hurtful. REDI, and some other authors, maintain a contrary opinion. But FONTANA, with much probability, attributes these innocuous effects to the smallness of the quantities thrown into the stomach at one time.

The venom of all vipers, of which there are many species, when introduced, by means of a bite, into the bodies of men and other animals,

animals, is extremely hurtful, and, if not timely prevented, is certainly mortal. The Abbé FONTANA, anxious to discover a remedy to remove, or rather prevent, the dreadful effects of this animal poison, tried, often at the hazard of his own life, several thousand experiments on this subject. In the course of these, he found, that oils, and particularly that of turpentine, were the most effectual in preventing the too often fatal effects of poisoned wounds occasioned by the bite of vipers. The best method of applying this remedy, he tells us from his own experience, which was great, is to foment the part affected with oil of turpentine as hot as the patient can conveniently bear, and to continue this application a long time. He thinks it also of use to keep the part affected immersed in water, either pure or impregnated, with some of the neutral salts, or with quicklime. These applications lessen the pain and inflammation. He likewise found that vomits had some effect in preventing the danger, but cutting out the wounded part, as soon as possible after the accident, was always the most effectual remedy, because it prevented the poison from being absorbed into the general circulation of the mass of blood, which infallibly produces death. The same method of care is practised with equal success upon sheep, horses, and black cattle, who are much more liable, when browsing on heaths, to be wounded by vipers than the human species.

Upon this subject, a curious and extraordinary fact must not be omitted. That insignificant and inactive insect called the *fresh water polypus*, of all poisonous animals, seems to possess the most powerful and active venom. Small water-worms, which the polypus is only able to attack, are so tenacious of life, that they may be cut to pieces without their seeming to receive any material injury, or to suffer much pain from the incisions. But the poison of the

polypus

polypus instantly extinguishes every principle of life and motion. What is singular, the mouth or lips of the polypus have no sooner touched this worm than it expires. No wound, however, is to be perceived in the dead animal. By experiments made with the best microscopes, it has been found, that the polypus is neither provided with teeth, nor any other instrument that could pierce the skin *.

The *spider*, which feeds upon flies, wasps, and similar insects, is furnished with a very sharp hooked forceps, placed near the mouth. With this weapon he seizes and pierces the flesh of such insects as entangle themselves in his web; and, at the same instant, by means of a small white proboscis, he infuses a poisonous juice into the wound, which, in a moment, kills the animal. This poison must be very active and deleterious; for flies, and many other insects, may be mutilated by depriving them of their legs, wings, and even cutting their bodies through the very middle of the abdomen, and, in that condition, will survive several days, as I have frequently experienced. I never prosecuted the experiment so far as to know whether any of the lopped off parts would be reproduced.

The poisonous weapons of the *scolapendra*, or *centibes*, are somewhat different from those of the spider. Its bite is so painful, especially in the East Indies, as we are informed by BONTIUS, that it makes the patient almost mad. When the claws of its forceps are examined by a microscope, on the upper side of each of them, near the point, a small aperture appears, through which the venom is conveyed into the wound. Of the East India centipes, LEEUWENHÖEK † had one sent to him alive; and he found, that, by pressing,

* Abbé Fontana on Poisons, vol. 1. p. 106. Transf.

† Continuatio Arcan. Natur. epist. 124.

pressing the claw, a small drop of liquor issued out of this aperture.

Stinging animals, of which the *scorpion* is the chief, likewise instil a liquor into the wounds they make. The poison of scorpions is more or less virulent in proportion to the heat of the countries they inhabit. In some parts of Africa, its effects are so dreadful, and these horrible reptiles so numerous, that LEO tells us, the town of Pescara is annually almost totally deserted by the inhabitants in the summer months; because inevitable death is the consequence of the scorpion's sting*. Signor REDI, when residing at Florence, had several African scorpions sent him from Tunis. They arrived in the month of November; and he irritated them to sting pigeons, pullets, &c. without discovering the smallest symptoms of uneasiness in these animals. But, what is singular, on the approach of spring, one of the scorpions, which had remained no less than eight months without food, and the wound of whose sting was formerly attended with no bad effects, stung to death two pigeons successively. A third and fourth, however, though wounded in the same manner, received no injury. But the same scorpion, after being allowed to rest all night, killed another pigeon next morning. At the point of the sting, REDI often observed a small drop of white liquor, which entered the animal's body along with the sting. This liquid venom, it should appear, is not secreted from the blood and other juices of the animal, during the cold months of winter. The operation of cold is also greatly assisted by abstinence from food. Benumbed with cold, and half-starved for want of food, how is it to be expected that the animal's fluids should retain their former vigour and activity, far less that they should be able to afford a liquor

* Leo Hist. Afric. lib. vi.

quor so highly exalted as to deprive other creatures of life? Like certain fluids of other animals, which are secreted in small quantities only, the sting of the scorpion, even in the hottest months of summer, after two or three attacks, is perfectly inoffensive, till the expenditure of this deleterious liquor has again been replaced by the operation of food and of time.

In the history of the *scorpion*, a remarkable circumstance must not be omitted. We are informed by gentlemen of veracity, who had lived several years in *Barbary*, that, when a scorpion is surrounded with a circle of burning coals or wood, and the animal begins to be pained with the heat, it runs about violently in quest of some mode of escape; but, finding that impossible, it strikes itself two or three times on the back parts with its sting, by which wounds its life is immediately extinguished. We are likewise told, that this is a common amusement among the soldiers of Gibraltar, where these noxious animals abound. This self-murder, produced by pain and despair, indicates two curious instincts; 1. That the scorpion is sensible of his dangerous situation; and, 2. That he knows the mode of getting quit of a painful and desperate existence. This fact likewise decides another controversy, whether poisonous animals of the same species can kill another by an infusion of their venom. The same fact is exhibited by the viper. Dr HERMAN, when transporting three large vipers in one glass, two of them were killed during the voyage by fighting and biting each other with their poisonous fangs; and the learned RHODIUS observed, at Padua, that two scorpions, which were put into the same glass, fought with their stings, and one of them first killed the other, and then devoured it.

The structure of the stings of *bees*, *wasps*, *hornets*, &c. has been

accurately described by several authors, and particularly by HOOKE and REAUMUR. Even with the naked eye, a person may sometimes perceive a bee discharge the venom from its sting; which is rendered still more perspicuous by a common magnifying glass. As the stings of these, and many other smaller insects, often produce inflammation and pain, these effects may be very soon prevented or removed by sucking out the instilled poisonous drop with the mouth; but, if this has been neglected, fomenting the part affected with warm oil and discutient ointments, as in the bite of the viper, seldom fails to be a complete cure.

We shall now make a few remarks upon the bite of that enormous species of spider denominated the *tarantula*. It is very frequent in, and infests that warm district of Italy called *Apulia*. BAGLIVI, a native of that country, and a well known and learned physician, published a long dissertation on this subject *. After BAGLIVI, LUDOVICUS VALETTA, a Celestine monk of Apulia, favoured the world with a treatise concerning this dangerous spider †.

The *tarantula* is a spider of that species which has eight eyes and eight legs, four on each side, and three joints in every leg. From the mouth proceed two sharp darts similar to a hooked forceps, or the claws of a crab, by which the animal can easily pierce the skin; and, after the wound is inflicted, the tarantula, by means of a proboscis situated between the claws of the forceps, instils a drop of a most active venom, which resists the operation of the usual alexipharmic medicines; for, notwithstanding the repeated use of them, the patient is affected with a gradually increasing melancholy, grows perfectly

* See Baglivi de Praxi Medica, et Dissertationes, Romae, 1696.

† De Phalangio Apulo Opusculum, Neapoli, 1706.

perfectly stupid and timorous, and, in a short time, expires. By what accident or fortunate thought an almost certain cure for the bite of the tarantula was first discovered, it is of little moment to inquire. But it is an unquestionable fact, that *music* is the only effectual remedy. At the first sound of a musical instrument, if the tune happens to rouse the attention and strike the fancy of the patients, though lying motionless, as in a fit of apoplectic stupor, they gradually begin to move their hands and feet, and at last get up, and, for three or four hours, dance with wonderful vigour and agility, which occasions profuse sweatings. They are then put to bed for a short time, and afterwards renew their dancing with the same spirit and vehemence. Instead of being exhausted by this violent exercise, the patients declare, and show by their exertions, that, instead of fatiguing them, the more they dance they become the stronger and the more nimble. In this exercise, the persons bit by the tarantula generally occupy twelve hours a day, and continue it for three or four days, when all symptoms of distress are completely removed. It is not every species of music which excites patients; for some are struck with one kind, and some with another. One is roused with a flute, another with a timbrel; one with a harp, and another with the violin. The musicians, accordingly, are obliged to make a variety of trials before they can accommodate their art to the minds of the sufferers. But we are assured by REDI, MEAD, FONTANA, &c. that brisk and chearful tunes produce the most instantaneous and happy effects; but that slow and melancholy airs have not the smallest influence. Whilst the *tarantali*, as they are called, or persons who have been bit by the tarantula, are dancing to music, they seem to lose all sense of modesty and decorum; they perform many ridiculous tricks, and talk in the most obscene manner. Heat exalts, and, of course, augments the dangers arising

from every species of animal-poison. Apulia is the hottest district of Italy; and, accordingly, the bite of the tarantula there produces more violent effects than in any other part of that country. The inhabitants of Apulia, from the heat of the climate, conjoined, perhaps, with some other circumstances, are generally meagre, passionate, witty, and, in an uncommon degree, subject to inflammatory diseases, phrensies, melancholy, and other species of madness. We are informed by Dr MEAD, who collected his facts from the most respectable authorities, that, in other countries, causes which produce only a slight melancholy, occasion the most deplorable effects in Apulia. ‘Women,’ he remarks, ‘in a *chlorosis*, suffer almost the same symptoms as persons poisoned by the tarantula do, and are cured the same way; and, in like manner, the venom of the scorpion does here, in effects and cure, agree very much with that of this spider*.’

From these, and many other instances of salutary effects of *music* in removing diseases produced by animal-poisons, it is amazing that this remedy is so seldom tried by our modern physicians. In many species of melancholy and madness, from whatever causes they originate, the effects of different kinds of music might at least be tried. If a person labouring under a deep melancholy could be excited to dance with spirit, and even with some violence, profuse sweats would be induced, and, probably, as in cases of mania occasioned by the bites or stings of poisonous animals, these sweats would expel the noxious cause from the system. Music might even be tried in the paroxysms of madness. If it should be found, which is by no means improbable, that music allays or cools the over-heated animal fluids, and, consequently, the turbulence of the mind,

* Mead on Poisons, p. 108.

mind, this cure would be infinitely more humane than the *coercions* of *strait waistcoats, stripes, &c.* which are, perhaps, too commonly prescribed even by the best physicians.

Ideas of this kind should not be despised. The ancients, with great wisdom and ingenuity, employed *music* as a cure, or, at least, as an alleviating remedy in almost every kind of *madness*. We are informed by a Jewish historian *, that SAUL, then King of the Jews, was afflicted with an *evil spirit* sent from the LORD; that is, the man was *mad*. What I think exceedingly curious, and shows the general opinion among those people concerning the salutary effects of *music* in mental diseases, is, that even the *servants* of SAUL, when he was frantic, recommended *tunes* on the *harp* as the most effectual cure. The passage is so remarkable, that I cannot refrain from transcribing it. ‘ And SAUL’s servants said unto him, Behold now
 ‘ an evil spirit from GOD troubleth thee: Let our lord now com-
 ‘ mand thy servants, which are before thee, to seek out a man who
 ‘ is a *cunning player* on an *harp*: And it shall come to pass, when
 ‘ the evil spirit from GOD is upon thee, that he shall play with his
 ‘ hand, and thou shalt be well. And SAUL answered one of his ser-
 ‘ vants, and said, Behold, I have seen a son of JESSE the Bethlehem-
 ‘ ite, that is *cunning* in *playing*.—Wherefore SAUL sent messengers
 ‘ unto JESSE, and said, Send me DAVID thy son, which is with the
 ‘ sheep. And JESSE took an ass laden with bread, and a bottle of
 ‘ wine, and a kid, and sent them by DAVID his son unto SAUL.
 ‘ And DAVID came to SAUL, and stood before him; and he loved
 ‘ him greatly, and he became his armour-bearer. And SAUL sent to
 ‘ JESSE, saying, Let DAVID, I pray thee, stand before me; for he
 ‘ hath found favour in my sight. And it came to pass, when the
 ‘ evil

* 1. Samuel, chap. 16.

‘ evil spirit from GOD was upon SAUL, that DAVID took an *harp*, and
 ‘ played with his hand : So SAUL was *refreshed*, and was *well*, and
 ‘ the evil spirit departed from him *.’ This is all well ; but, from
 the following part of the history, we learn that DAVID was not only
cunning in playing on the *harp*, but that he was equally *cunning* in
politics ; for, in a short time afterwards, he *barped* poor SAUL both
 out of his *kingdom* and his *life*.

The old Greeks and Romans seem to have understood the effects
 of *music* in alleviating and even curing particular diseases. We are
 told by GALEN, an antient, and, to this day, a most celebrated phy-
 sician, ‘ that ÆSCULAPIUS used to recover those, in whom violent
 ‘ motions of the mind had induced a hot temperament of body, by
 ‘ melody and songs †.’ PINDAR, in one of his odes, takes notice of
 the same happy effects produced by *music* ; and Dr MEAD very pro-
 perly remarks, that, from these and similar facts, not only the no-
 tion but the term of *charming* (*a carmine*) seems to have derived its
 origin ‡. THEOPHRASTUS, in his Treatise on *Enthusiasm*, informs
 us, that *ischiadic* pains were cured by the *Phrygian* melody. This
 species of music was performed upon the pipe, and was the most ve-
 hement and exhilarating that was known among the antients ; for it
 sometimes excited the hearers to what had the appearance of mani-
 acal and furious exertions of body ||, which perfectly corresponds
 with the effects of *music* in expelling the venom of the *tarantula*.
 Beside the effects of music upon the minds of persons labouring un-
 der certain diseases, some of the antient physicians carried this prac-
 tice

* 1 Samuel, chap. 16. verse 15. to the end.

† De Sanit. Tuenda, lib. 1. cap. 8.

‡ Mead on Poisons, p. 123.

|| Bartholin. de sibiis veter. l. 1. c. 9.

tice farther, and placed the instrument upon the part affected. CAELIUS AURELIANUS denominates this application of music, *decan-tare loca dolentia* ; and adds, that the pain is mitigated and often dis-cussed by the tremblings and palpitations of the diseased part *. AU-LUS GELLIUS mentions this same cure of *ischiadie* complaints, and subjoins, from THEOPHRASTUS, ‘ that the music of a pipe, rightly ‘ managed, healed the bites of vipers †.’

APOLLONIUS tells us, that *music* cured distractions of mind, epi-lepsies, and many other distempers ‡. As to this fact, he is joined by DEMOCRITUS, who taught, that the *music* of *pipes* was the pro-per medicine for many diseases || ; which THALES of *Crete* con-firmed by his practice. When sent for by the LACEDEMONIANS to remove the pestilence from them, he is said to have done it by the operation of *music* §. All these instances show, at least, that *music* was very antiently employed as a remedy both in mental as well as cor-poreal diseases. CAELIUS AURELIANUS ascribes the invention of this cure to PYTHAGORAS, who settled and founded his sect in that very part of Italy where the *tarantulae* are most frequent, which was then called *Graecia Magna*, and now *Calabria*.

With regard to the dreadful effects produced by the bite of a *mad dog*, we shall make only a few remarks. The terrible disease it oc-casions is generally known by the appellation of *hydrophobia*, or *dread of water*. The wound from the bite of a mad dog, at first, differs not

* Morb. chronic. lib. 5. cap. 1

† Noct. Attic. lib. 4. cap. 13.

‡ Histor. Mirabil.

|| Apud Aul. Gell. loc. citat.

§ Plutarch. de Musica.

not from that of any other animal, and heals as soon; for a considerable time often elapses before any symptoms of madness appear. Instances are recorded where the disease was deferred till two, three, or six months after the wound was inflicted. I myself knew a case where the wound did not show itself till full twelve months after the bite. This case was that of JAMES POLLOCK, a blacksmith and athletic person, in the suburbs of Edinburgh. As soon as symptoms of madness appeared, he was carried to the Royal Infirmary, where, in a few days, he died of an evident *hydrophobia*. GALEN tells us, that he saw a case of *hydrophobia* more than a year after the wound was received*. Dr MEAD, who had great practice as well as skill with regard to the effects of different poisons, informs us, that he knew a case of this disease more than eleven months after the fatal accident. He adds, however, that the attack generally happens in thirty or forty days, and sometimes, especially in young people, in fifteen or sixteen. The first approaches of this distemper are commonly discoverable by an acute pain in the part that had been wounded, which gradually extends to the adjacent parts, and is followed by a general lassitude, and an uneasiness in the limbs. The patient then grows melancholy; his sleep is disturbed and unrefreshing; he complains of faintness and of depressed spirits, and especially of an oppression at his breast; his pulse intermits; his nerves and members tremble; he is affected with cold sweats, a great sickness, and loaths every species of food. Though he feels an inward heat and thirst, and wishes to drink; yet he swallows meat, but particularly liquors, with the utmost difficulty. These symptoms proceed increasing in their violence; and, the next day, from the pain he feels in swallowing, he conceives such an aversion to liquids, that the very sight of them throws him into dreadful convulsions. This *hydrophobia* has
always

* Comment. 2. in 1. Prorrhet. Hippocrat.

always been considered as an infallible symptom of a person's being affected by the poison proceeding from the bite of a mad dog; for it seldom, if ever, appears in any other disease.

At this period of the distemper, a fever usually comes on, which is attended with a quick but low pulse. The patient cannot command the smallest degree of sleep; his voice turns hoarse; a white froth collects in his mouth, which he spits out upon the people about him; universal convulsions succeed, but particularly in the throat, and in the *musculi erectores penis*, which produce a continued *priapism*. During this dismal scene, which is generally fatal in the course of two or three days, a *delirium* appears, sometimes attended with the most dreadful paroxysms of rage and fury, and frequent attempts of the patients to injure their most beloved friends and relations. But this disease, instead of *furor*, more commonly terminates in a deep *melancholy*. In this situation, the unhappy but humane patient, resigns himself to the quick approaches of death, and desires his attendants to beware lest he should hurt them, begs them not to trouble him any more, and, in a short time, expires in convulsions.

This cruel and terrifying disease is taken notice of by many of the antients, such as DIOSCORIDES, GALEN, AETIUS, ÆGINETA, &c. None of them, however, have described it so accurately, and with so much precision, as CAELIUS AURELIANUS *. From the writings of SORANUS, and other Greek physicians, he has collected the symptoms of this disease with great care and exactness. Among the moderns, the history of this malady is ably delivered to us by VANDER WIEL †, and the ingenious Dr LISTER ‡. There are some symp-

VOL. II.

3 O

toms,

* De Morbis acutis, lib. 3.

† Observat. varior. cent. 1. obs. 100.

‡ Exercit. Medicinal.

its virtues, informs us, that, in Sicily, it has received the denomination of *Sanatodos*, or *All-beal*. The plant *Alyssum*, or *Madwort*, among the antients, had its name from its great efficacy in preventing *canine madness*. *Garlic*, *Agrimony*, and *Oxylapathum*, were likewise employed with advantage. Dr MEAD justly remarks, that all these remedies are powerful *diuretics*.

Most *insects*, especially when taken internally, create an unusual discharge of *urine*: But those flies, known by the name of *Cantharides*, have a more powerful effect in promoting this evacuation than any other species. The learned BACCIUS *, from the authority of RHAZES and JOANNES DAMASCENUS, prescribes *Cantharides* to be given in substance for many days successively. This *antidote*, as he calls it, is prepared by infusing the flies in four butter-milk twenty-four hours, then drying them, and, with the flour of lentils and wine, making them up into troches of about a scruple in weight, one of which is to be taken every day. Even though the patient, he adds, by the use of this medicine, should pass urine mixed with blood, yet copious draughts of milk removes that symptom, and the *hydrophobia* is happily prevented. We are likewise informed by BACCONE, that the physicians in Upper Hungary prescribe five *Cantharides* as a dose to men, and a greater quantity to larger animals †.

AETIUS ‡, who carefully collected all the medicines prescribed by the antient physicians for preventing or curing *canine madness*, affirms, that he himself knew an old man who cured those who had the misfortune to be bit with *common sorrel* only. He washed the wound with a decoction of this plant, and laid it on the part as a cataplasm, and likewise

* De Venen. p. 89.

† Museo di-fifica, obs. 21.

‡ Lib. 6. cap. 24.

likewise gave it in drink, which made the patient discharge great quantities of turbid urine.

From all these and similar accounts, it appears that the remedies against the effects of this poison have, in all ages, been strong *diuretics*. By reflecting on this circumstance, the celebrated Dr MEAD was led to recommend the following prescription: ‘ Let the patient be bled at the arm nine or ten ounces. Take of the herb called, in Latin, *Lichen cinereus terrestris*; in English, *Asb-coloured ground liver-wort*, cleaned, dried, and powdered, half an ounce;— of black pepper powdered, two drachms: Mix them well together, and divide the powder into four doses, one of which must be taken every morning, fasting for four mornings successively, in half a pint of cow’s milk warm. After these four doses are taken, the patient must go into the cold bath, or a cold spring or river, every morning fasting, for a month: He must be dipped all over, but stay in (with his head above water) longer than half a minute, if the water be very cold. After this, he must go in three times a week for a fortnight longer *.’

This remedy was first published in the Philosophical Transactions of London †, by Mr DAMPIER, in whose family it had been long, and, of course, infamously kept a secret. In the year 1721, however, Dr MEAD, like a gentleman and a man of humanity, procured it to be inserted in the *Pharmacopeia Londinensis*, under the name of *Pulvis antilyffus*. This Lichen, like the other medicines formerly recommended, is a strong diuretic. To this prescription Dr MEAD added cold bathing, either in the sea or river water, according to the situation

* Mead on Poisons, p. 164.

† No. 237.

tion and circumstances of the patient. The antients also had the idea of curing canine madness by cold bathing. But, instead of employing it as a preventative, they never used it till evident symptoms of *hydrophobia* appeared, when it was perfectly ineffectual. Besides, their practice often amounted nearly to actual *drowning*, which, to be sure, would remove every disease as well as the *hydrophobia*. CELSUS *, who was as bold as well as a skilful physician, prescribes cold bathing as the only certain cure for this dreadful disease; and advises, that, if the patient cannot swim, he should be allowed to remain some time under the water, that he may swallow part of the fluid; and, if he can swim, that he should be kept under by force, in order to compel him to drink. Dr MEAD remarks, that this practice is just *drowning* and *recovering* by turns†. We are told by the famous VAN HELMONT ‡, that he saw an old man, who had been seized with the *hydrophobia*, cured by *submersion* in salt water; that this patient was first held under water about four minutes, then taken out, and again plunged twice, about a minute each time; that, when taken out, he was thought to be quite *dead*; but that, by warmth, and by being laid across a barrel, he threw up the water he had been obliged to swallow, and recovered both his life and right senses! The same author tells a story of a cure of the common *mania* by *drowning* the patient in fresh water; from which he draws this *sage* conclusion, that it makes no *difference* in the case whether the water be *salt* or *fresh*! Such medical practice may be reckoned *bold*, as it certainly is; for, to *drown* any person will most effectually remove all his *complaints*! It is astonishing that the learned Dr MEAD, within less than fifty years ago, should have related seriously stories almost equally ridiculous in *substance*,

* Lib. 5. cap. 27.

† Mead on Poisons, p. 172.

‡ Ortus Medicin. demens idea.

as they are absurd in the *terms* he employs ; but so it is* ! The Doctor, however, afterwards remarks, that, before the canine madness makes its appearance, simple *immersion*, without *drowning*, often prevents this horrible disease †.

Two other preventative remedies have been, by some physicians, highly recommended. 1. What is called the *Ormskirk medicine for the bite of a mad dog* : It is no part of my business to give specific quantities, because these may be either false or fanciful. I shall, however, relate the bases of the two supposed remedies.

1. The *Ormskirk* medicine consists of chalk, alum, Armenian bole, the powder of the plant called *elacampen*, and the oil of aniseeds.

2. The *tonquin* remedy, which is recommended as an antidote by Sir GEORGE COBB. It is composed of native and factitious cinabar, compounded with musk.

With regard to the *serpent* tribe, which is very numerous, some of them are armed with *fangs*, through which a mortal poison is conveyed into the bodies of such animals as they happen to bite ; but luckily the proportion of these noxious species, when compared to the whole, is very small. The species of *serpents* described by LINNÆUS amount to 218, of which 32 only are poisonous, and, of course, 186 are innocuous. Of *lizards*, 77 species are enumerated, not one of which contains or emits a particle of venom. The *toad* is a verrucous animal, has a lurid appearance ; his movements
are

* Mead on Poisons, p. 173.

† Ibid. p. 177.

are sluggish and disgusting ; and, when irritated, he emits, from every pore of his body, a frothy substance like saliva. The forbidding aspect of the toad has created him numberless enemies, as well as a very bad, though very unjust, character. Wherever he appears, he is persecuted, maltreated, and murdered, by children, and even by adults, on the supposition, that, because he is an ugly animal, he must therefore be venomous ; but, notwithstanding his unseemly appearance, he is inoffensive, and perfectly destitute of poison. The same remark applies both to our water and land *lizards*, of which we have very few species that are natives of Britain. Still, however, though their aspect is by no means so disgusting as that of the toad, a ridiculous opinion is generally entertained that they are venomous, and they, accordingly, suffer the same persecution as that innocent animal.

Of venomous animals, I have looked, but looked in vain, for a final cause. What could be the intention of creating *reptiles*, both abhorrent to the sight, and, by their bites or stings, fatal to men and other animals, I cannot even form a conjecture. Their poison, it has been said, is given to them as a personal protection. That I deny ; for, even of the *serpent* tribes, though the form of their bodies, and their mode of life be nearly the same, not one in ten of them are provided with this supposed defence. A man, when walking, either for health or amusement, on a grassy turf, accidentally tramples upon a viper ; the abominable reptile bites him, instils a poison into the wound, and, if proper remedies are not timely applied, a cruel and inevitable death is the consequence. He will be more than an intelligent man who can demonstrate a *final*, or, which is the same thing, a *good* cause, for such a *consequence*. Serpents have, in all ages and countries, had the reputation of extraordinary *sagacity*,

Jagacity, or rather *cunning*, for what reason I could never discover. Their aspect, their movements, the idea of their venom, in a word, their whole frame, excite horror. When these circumstances are taken into consideration, what, in the name of wonder, should have induced MOSES to represent this *vile*, this *abhorrent* animal, as a proper object of *temptation* to what, we must suppose, to have been the finest woman that ever existed? Yet *such things are!*

Conclusion of the PHILOSOPHY OF NATURAL HISTORY.

I HAVE now finished my original plan; with what success I know not. I shall only say, what every intelligent reader will easily perceive, that my labours have been great. Before I began the work, had I known the numerous authors which it was necessary to peruse and consult, I should probably have shrunk back, and given up the attempt as impracticable, especially for a man so early engaged in the business of life, and the cares resulting from a family of no less than *thirteen* children, *nine* of whom are still in life.

In the first and second volumes, I have endeavoured to unfold the general as well as distinctive properties of the vegetable and animal kingdoms. Occasionally, I have done more. I have sometimes given pretty full characters both of the figure, dispositions, and manners of animals. In these descriptive discursions, MAN has not been neglected. Being the principal animal in this planet, he, of course, deserved particular attention, and it has not been

with-held. The varieties of the human species, in every region of the globe, have been collected and described from the most authentic resources both antient and modern. Even in the most uncultivated, and, to us, deplorable situation of the human race, evident traces of goodness, of genius, and of heroism, are to be found. These amiable qualities, it must be confessed, are too often sullied by cruelty, irascible passions, and every species of vice. But these qualities are universal, in whatever situation men, whether in a civilized or barbarous state, are placed. The strangest and most unaccountable part of the history of mankind is that of their *eating* one another; and yet, from the numerous evidences I have produced, it is impossible not to give credit to the shocking fact. The reality of *human sacrifices* is equally certain as the existence of *cannibals*. The diversity of dispositions, the versatility of genius, the great differences of taste and of pursuits, are strong characters of *Man*, and distinguish him eminently from all the other inhabitants of this earth.

I N D E X.

A

- Abraham offering up Isaac, 323.
- Abfurdities in Pliny, 20.
- Abyssinians. See Ethiopians, &c. 207.
- Achen, natives of, resemble the Tartars and Chinese, 176.
- Acridophagi, or locust eaters, a race of men on the frontiers of the desert of Ethiopia, black, meagre, of small stature, but very nimble, 208. Strange effects of this species of nourishment, *ibid*.
- Adolphus (Gustavus) wished to embody a regiment of Laplanders, but gave up the attempt, 160.
- Aelian, an account of, 21. His work intituled, *Of the Nature of Animals*. His favourite aim, to rouse the sentiments and enforce the practice of genuine morality, 22. He seldom takes notice of external form; but confines himself to mental character and dispositions, with unconnected anecdotes of animals, 23.
- Activity one of the sources of animal happiness, 458.
- Aldrovandus Ulysses, physician at Bononia, died about the end of the 16th century;—wrote 12 folio volumes. His arrangement, 31,—35.
- Alexander the Great, encomium on, 13.
- Amsterdam, island of, places of worship erected on artificial oblong mounts 11 feet high, inclosed with a parapet of stone 3 feet high. Temple 20 feet long, 14 or 16 broad. Worship performed at the distance of 50 or 60 yards from it, 304. These places of worship are frequent, being dispersed over the whole island;—level road

16 feet broad, with many others intersecting it, and terminating in it;—on each side fenced with reeds, and shaded with fruit-trees. Not an inch of waste ground. Natives polite and obliging, 305. Mode of salutation, touching of noses, *ibid.* Mode of accepting any thing, applying it to their head. Weapons formidable. Peculiar custom of cutting off the little finger of one or both hands. Government similar to that of Otaheite, 406. See *Friendly Islands*.

Andrii. See *Generation*.

Andry (Mr) 105.

Angola, Negroes of, emit, when heated, a smell so rank and offensive, that it infects the place through which they pass for more than a quarter of an hour, 217. Animals about to sleep chuse a certain position of body, 401.

Apollonius's authority that music cured epilepsies, &c. 471.

Arabs, 194,—196.

Aracan, inhabitants of, admire large flat foreheads, 175. Eat, without reluctance, putrified fish, flesh, mice, rats, and serpents, *ibid.*

Arada coast, natives of, prefer dog's flesh as the nicest delicacy, 215. Are the best cultivators of the ground, 218.

Argensola's account of the *Papous*, 183.

Aristotle, *encomium* on, 10. His method of arrangement, 11. Contents of his *books* of natural history, *ibid.* & 12. His object, to reduce natural knowledge into scientific form. The amazing extent and success of his labours, 14. His book consists of philosophical dissertations on the structure, manners, and dispositions of animated beings, 16.

Arrouaguas milder than the *Caribbees*, 233. May be employed in hunting and fishing, *ibid.*

Artedi, (Petrus) a Swede and fellow student of Linnaeus, who published, at Leyden, in 1738, his posthumous papers on fishes, 48. His arrangement, 49.

As sleeps less than the horse, 402.

Assiniboils large, robust, and well proportioned;—swarthy;—scarcely any hair on their bodies;—fleet and indefatigable, bold and hardy, like the oriental Tartars, 230.

Augustus Caesar sacrificed at the altar erected to Julius, his uncle, 400 senators and knights, who had espoused the part of Antony, 332.

Authority of great names a cloak for indolence, weakness, and credulity, 150.

Authors who have treated of Natural History—Aristotle, Pliny, Ælian, Oppian, Gesner, Wotton, Belonius, Rondeletius, Salvianus, Aldrovandus, Jonston, Willoughby, Ray, Artedi, Klein, Linnaeus, Buffon and Daubenton, Brisson, Pennant, &c.

B

- Baboons, apes, and monkeys**, robbing orchards or corn-fields, appoint a sentinel, who gives the alarm by a shriek, 425.
- Badgers** sleep the whole night and three-fourths of the day, 402. Are subject to a lethargic or benumbed state during the winter, *ibid.* Much sleep makes them very fat, though they eat little, *ibid.*
- Bali**, inhabitants, an account of, 179 ;—by Mandello and others, *ibid.*
- Bambara** Negroes stout, but all thieves, 217.
- Banda** islands, inhabitants of, noted for longevity. Men of, indolent ; the women laborious, 179.
- Barbans** will not eat any thing that has been animated ;—deprive nothing of life ;—prevent, as far as lies in their power, those that would, 188.
- Barbary**, inhabitants of the mountains white, of the plains and sea coasts brown and tawny, 198, 199.
- Batavia**, unhealthy state of its capital, 293. See Java.
- Bats** sleep during the winter, 407. Fix themselves by their feet, *ibid.*
- Bear** may be kept awake during the winter, by keeping him in a due temperature, and supplying him with food, 407.
- Bedas**, in the north of Ceylon, inhabit only a small district. Complexion fair, sometimes red. Their language differs from those peculiar to India. Their sole arms bows and arrows. Do not dress their meat, but season it with honey, 189. Seem to be of European extraction, 190.
- Bees**, language of, 433.
- Being*, or *body*, no one with qualities and powers entirely peculiar to itself, 3.
- Belonius** (Petrus) published, in 1552 at Paris, a vol. *De Aquatilibus*, under which class he includes amphibious animals. His method. In 1555, he published another vol. upon *birds*. Method of arrangement, 28.
- Bengal**, the natives of, more yellow than the Moguls, 187. Women of, lascivious, *ibid.* Beautiful and handsome. Mild in disposition. A trade in slaves, male and female, carried on, *ibid.*
- Birds**, account of, by Aristotle, 11.—Wotton, 26.—Belonius, 28.—Aldrovandus, 32.—Jonston, 35.—Willoughby, 36.—Ray, 44.—Klein, 51.—Buffon, 67. Birds intermix more frequently than quadrupeds,—are more libidinous,—more prolific, 68 ; Briffon, 69. ; Pennant, 74. Harvey remarks, that the situation of the anus and vulva

vulva is different in birds from what it is in other animals, that it is the reverse, 85; process in the hatching of eggs, 86. Hybrid birds prolific, 146. Birds sleep with their head under one wing, 402. None but the swallow and cuckoo supposed to sleep all winter, 405. Bats do, 407. Males more loquacious than females, 437. Exception, *ibid.* Final cause, 438. Birds of every species have a language, and peculiar modulations of voice expressive of love, pain, anxiety, &c. Some confined to individuals of the same species; others perfectly understood even by different genera and orders of birds, 426. Utter a peculiar cry upon the appearance of carnivorous animals, 427. The language of some species is copious and fluent, of others more limited, *ibid.* No bird mute, *ibid.* Of owls expressive, 428. Eagle kind shrill and piercing, *ibid.* Raven's croak and solemn note, *ibid.* Crow, *ibid.* Rooks attempt to sing, *ibid.* Parrot kind, facility and extent of their modulations, *ibid.* Pigeon, woodpecker, fern owl, passerines, and swallow. Gregarious and aquatic birds noisy and loquacious, *ibid.* Birds of the finest plumage have sometimes the most harsh and disagreeable notes, 429.

Blacklock's (Dr) account of the difference between his perception of persons and objects when awake, and when dreaming, 398, 399. Had no recollection of ever having seen light, *ibid.* He recognised persons by hearing them speak, by feeling their head and shoulders, or by hearing them breathe, *ibid.*

Bolabola, a South Sea island, 274.

Body, or being, no one with qualities and powers entirely peculiar to itself, 3.

Bonnet's theory of generation, 117. His experiments on the section and reproduction of the parts of earth worms, 123,—125. On fresh water worms, 125, 126.

Boo (Lee) from Pelew. See Lee Boo.

Borandians, 158. See Varieties, &c. Have no similarity to the Russians, 163.

Borneo inhabitants, an account of, 179.

Bory (M. de) attests that a she mule brought forth a foal, 143.

Botany Bay. See New Holland.

Bourguet. See Generation, 103.

Boxing and wrestling, amusements in the South Sea Islands, 314.

Branches of trees, green, in the South Sea islands, a kind of flag of truce, 314.

Brazilian slaves submit to any labour except cultivating the ground, 234. Savages of Brazil of the same size, but stronger and more agile than the Europeans. Fewer diseases. Live longer. Their colour a mixture of red and brown. Hair black, seldom grows hoary. Pull the hair of their beards and eye-brows. Pierce their under lip to admit an ornament, 238. Flatten the noses of their children. Go naked, *ibid.* Civilized by missionaries, *ibid.*

Bread of the Laplanders, pounded fish-bones, with the tender bark of the birch or pine, 161.

Bread-fruit, description of, 241.

Briffon, 1756,—1760. Synopsis of quadrupeds, cetaceous animals, and birds. His arrangement, 70, ingenious, but confined. His descriptions clear, concise, and pointed.

Brute animals, their condition with regard to pleasure and pain, 456. Have no idea of futurity, 457. Are exempt from the tortures of imagination, if deprived of its pleasures, *ibid.*

Buffon, vol. 1. 1749, p. 59. His method, 61.;—inconsistency, 63, 64. His method of classification founded upon a local idea, 65. Pennant's Synopsis begun as an index to Buffon's voluminous history, *ibid.* Buffon falls into the same mistake for which he censures Aldrovandus—27 vols. 4to, unfinished. Daubenton's accurate descriptions, 67. Buffon diffuse, yet elegant and entertaining;—of great learning, much candour, and deep research, 69. His theory of generation, 110,—117. His account of the Negroes, 219. Tells us that dreams are produced independent of mind, 401.

Business a source of pains and pleasures, 454.

Butterflies, parts of generation in the various kinds extremely similar, 153. Great prolific powers, *ibid.* Different kinds may probably unite, *ibid.* Proposed experiment on the subject, *ibid.* Coition debilitates and quickly kills butterflies; but, when confined, and prevented from mutual embraces, they preserve both their existence and vigour for five or six months, 155.

Byron (Commodore) his account of the Patagonians, 353. Wild appearance, between six and seven feet high, *ibid.*

C

Caelius Aurelianus's description of canine madness, 473.

Caffres. See Hottentots.

Cassaria contains. See page 209.

Calicut, Naires, or nobles of, whose sole profession is arms;—handsome and comely;—of an olive colour;—tall, hardy, brave, and dexterous;—lengthen their ears to their shoulders;—have each only one wife;—but the wives have as many husbands as they choose;—this privilege confined to ladies of rank among them, 188. Common people smaller and worse shaped than the nobles; thick legged, *ibid.*

Calmuc. See Tartars.

Cambaia, inhabitants of, ash-coloured, 190.

Camel,

Camel, about to sleep, places his head between his fore feet, 401. Language of, 407.

Delighted with songs, *ibid.*

Canary Islands, inhabitants of, not Negroes, 210.

Canine Madnefs, 471, 2, 3. Remarks on, 471. Cure of, 477.

Cannibals, or eaters of human flesh, proved to exist;—instances of the practice, 307.

Proofs of its existence in former times, 310. &c. And in different countries, even among Greeks, Romans, &c.

Cantharides, an antidote against canine madnefs, 476.

Cape of Good Hope, description of, 299. Inhabitants, though sprung of blacks, are the fairest people of Africa, 226. Cape Country naked and desolate. Market supplied from a distance of 900 miles. Wood from Batavia. Few inhabitants, 300. Women handsome, excellent mothers and mistresses of families. Original natives of the Cape. See Hottentots. Their hair curls in ringlets. Drefs, a sheep-skin thrown over their shoulders. The men wear a small pouch on the middle of the waist. Women, a broad leather flap, adorned with beads and small pieces of copper: Both men and women wear necklaces, and sometimes bracelets of beads; the women wear rings of hard leather round their ankles to defend them from the thorns. A modest, and even shy, people; in speaking, cluck to divide their sentences. Different tribes of them have different customs. All peaceable and friendly, except the Boschnien, who live by theft and plunder, 302. Use lances, bows, and arrows, dipt in poison. Throw stones to hit a dollar, repeatedly, at the distance of a hundred paces. To defend themselves against these free booters, the other natives train bulls, and place them as guards round their towns during the night. The chiefs of the Hottentots drefs in the skins of lions, tygers, and zebras. Custom of anointing with fresh grease. Marriage ceremony, 303. Females have two skinny appendages resembling the teats of a cow, which have been much magnified, 304.

Cape de Verd Islands, inhabitants of, mulattoes from the Portuguese settlers and native Negroes, 211.

Cape de Verd coast Negroes, 212.

Caribbees, tall, of an agreeable aspect, small black eyes, long smooth black hair, olive colour, 233. Can never be reconciled to labour, *ibid.* Females modest, wear aprons and light buskins, 234.

Carthaginians offered human sacrifices, 325. And eat dogs, *ibid.*

Cashmere, inhabitants of, famous for their beauty, 200.

Cats, sleep light in general; but sometimes more profoundly than most other animals, 402. Language more limited than that of the dog, 423. In the season of

love

- love the female goes in quest of the male ;—her cry for admittance, when barred out, similar to that she utters when desirous of food, *ibid.*
- Causés. See Final. Why the vulgar are as happy as the learned, 456. Why mad people have so great muscular strength, 474.
- Celsus prescribes the cold bath for hydrophobia, 478.
- Centipes, or Scolapendra, of the East Indies, poisonous, 463. Aperture in its forceps, *ibid.*
- Ceylon, inhabitants of, resemble those of the Malabar coast ;—ears hanging down ;—aspect mild ;—go almost naked. See Bedas, 189. Alert, dexterous, and lively, *ibid.* Go almost naked, *ibid.*
- Chacrelas, in Java, white and fair, with weak eyes that cannot bear the rays of the sun, 178.
- Chardin's account of the Chinese, 169.
- Charlevoix, characters of the negroes, 217—218.
- Charming, a carmine.—*Nihil hic nisi carmina defunt.* Virg. 470.
- Chastity and modesty almost unknown in a state of uncultivated nature, 320.
- Chicken, one of four or five days old, is able to express sounds of complacency, of disapprobation, or of a sense of danger, 430.
- Children, sources of exquisite pleasure, or pain, to their parents, 454.
- Chili, natives in colour resemble reddish copper, middle size, large chests, thick limbs, small eyes, long ears, black hair, wear no clothes, but a skin thrown over their shoulders, 239.
- Chinese, resemble the Tartars in their persons, but are dissimilar in their manners, 167. Perhaps the same race, modified by a different government ; are effeminate, peaceable, indolent, submissive, superstitious, ceremonious, and parasitical, 167. Hugon's account of, 168. Dampier's, *ibid.* See also Sir George Staunton's. Palafox's, 169. Broad faces, small eyes, and hardly any beard ;—those of Canton, and the southern provinces, swarthy ;—of the interior, white. Chardin's account of them, *ibid.* Eat their victuals with small sticks, 171. Their women have excessively small feet, *ibid.*
- Cholula, in Mexico, human victims offered there, 330.
- Christianity blended with some remains of Paganism, 348.
- Cimbri offered human sacrifices, 327.
- Circassia, inhabitants extremely fair and beautiful, 201.
- Civilization promoted by population, 232.
- Classical learning abused, 448.
- Climate, influence of, between 18°. N. and 18°. S. The inhabitants of Africa, excepting those

those of Abyssinia, are black ;—between the 18th and 20th degree the inhabitants cease to be negroes ;—between the 20th and 35th degree of north latitude, the inhabitants are brown or tawny ; but pretty handsome and comely. In more temperate climates, live the fairest and handsomest people on the globe, 260. The Hottentots, though sprung from blacks, are the fairest people in Africa, because they inhabit the coldest part of that continent, 226.

Cochin China, the inhabitants of, though more southerly, are more ugly than the Chinese, 172. The monarch absolute, rich, &c. The inhabitants brave, active, and industrious ; though poor and ignorant, lovers of truth, polite to strangers and to each other, *ibid.* Women fair and beautiful :—have no idea of modesty ;—when convicted of infidelity exposed to enraged elephants. Religion the same with that of the Chinese. The inhabitants read Chinese books. Their country consists of ridges or chains of mountains. The intermediate vallies well cultivated, 173. Many woods and wild beasts. Gold mines frequent, but much neglected. See Rochon's Voyage to Madagascar and the East Indies, *ibid.*

Cock, his extent of language, generosity, gallantry, warning-voice, love-speeches, terms of challenge and defiance, crowing, &c. 431.

Cold, the cause of the hybernation of animals, 408. And in some the exclusion of the external air, 412.

Colour of mankind darkest in the torrid zone and polar regions, fairest in the more temperate and cold climates, *passim*.

Comania, women of, extremely handsome, 201. Preserve the freshness of their complexion till the age of 45 or 50, 202. Singular mode of repudiation, *ibid.*

Condamine, voyage de la, 237.

Confusion in Pliny, 21.

Congo, negroes of, less black than those of Senegal ;—some of them have red hair ; some brown eyes ; some green, 216. Of small stature, excellent fishers, but much addicted to desertion, 218.

Coréal, le Voyage de, 232.

Cortes, cut off fifty heads, 329.

Crow, amorous cry of, somewhat ridiculous, 428.

Crustaceous animals, viz. crabs, lobsters, &c. 76.

Cultivated minds experience more exquisite pleasure and more acute pain than others,

D

- Daleppatus.** See **Generation.**
- Dampier's account of the Chinese on the Island of St John, 168.** Of the Tonquinete, 173. Of the inhabitants of Malacca and Sumatra, 176. Of the Nicobar Islands, 177. Of Mindanao, 180. Of New Guinea, 133—134. Of New Holland, 185.
- Danes, robust and tall, of a florid complexion ;—women fair, handsome, and very prolific, 206.** Offered human sacrifices in antient times, 332.
- Dara, women fresh coloured and beautiful, 199.**
- Daubenton, the associate of Buffon in his voluminous work. See Buffon.**
- Deity, the idea of, universal, 347.** In a dreary frozen region regarded as cruel and unpropitious ;—in mild and warm climates, as mild and benign, *ibid.* Sickness, misfortune, and calamity, suggest the idea of *bad* as well as of *good* divinities ;—the idea of good and bad spirits universal, 348.
- Dictionaries, imperfection and absurdities of, 451.**
- Diuretics useful as an antidote against canine madness, 476.**
- Dogs bark in their sleep, 401. Talents, language, &c. 421. Mad, 471—472.**
- Domestic animals often miserable, 457.**
- Dormouse, garden and fat squirrel, are of the same temperature with the external air, 408.**
- Dramatic entertainments not unfrequent in many of the detached islands scattered over the great Pacific Ocean, 313.**
- Dreaming, theory of, 365—366.** Imagination active ;—freed from every check, roams at large, and produces a belief of the real existence of imaginary objects ;—reason being suspended by sleep, *ibid.* Its final cause ;—a source of happiness ;—objection ;—answer ;—disagreeable dreams tend to remove their causes ;—imaginary scenes and situations contemplated, whether asleep or awake, have a tendency to exercise, and, consequently, to strengthen virtue, 372—373. Advantage to be derived from dreams, to warn us of our most predominant passion, 375. A nocturnal register, 376. Specimen, 377—378—379. Ominous dreams considered, 381. Perhaps fortuitous, and totally independent of supernatural impulse, 383. Dr Blacklock's perception of persons and objects more vivid in a dream than when awake, 398. Other animals beside man dream, 401.
- Drink of the Laplanders whale oil or water, with an infusion of juniper berries, 161.** Of the Tartars milk, and the blood of horses. Of the antient Scythians, the blood of their enemies, &c. Of the Ethiopians, an acid beverage of tamarinds and water, 207.

Duck-kind, the voices of the male and female remarkably different ; the former feeble and inward ; the latter loud and sonorous, 429.
 Duverney (M.) supports the egg system of generation, 109.

E

Eagle-kind, their notes shrill and piercing ;—in the season of love much diversified, 428.
 Education, preposterous method of, 446—447.
 Egyptians, of an olive colour, 197. Idle and cowardly, *ibid*.
 Elegance necessary to science, 43.
 Elephant, language of, 414. Other particulars of the history of that wonderful animal, *ibid*. and 415. Learns the meaning of words, and understands what is said to him ;—remarkable story of one, 116.
 Esquimaux, 158. See Varieties, &c.
 Ethiopians, brown or olive, tall, have regular features, fine eyes, well proportioned noses, thin lips, and white teeth ;—are a half polished people ;—wear garments of silk or cotton ;—consider raw flesh as the greatest delicacy ;—have vines, but make no wine ;—drink an acid beverage of tamarinds and water ;—require several days to finish a common letter, 207.
 Eunuchs, many made in Bengal ; some by total amputation, others by privation of the testes, 187.
 Exertion, productive of pleasure, vigour, and health, 458.

F

Feeling (nicer) necessary to the formation of taste, 42.
 Final causes of loquacity in human females, 440. Of restlessness in children, 446. Of the poison of serpents, 481.
 Finlanders, muscular and fleshy ;—eyes a deep yellow, 205.
 Fishes, authors who have treated of, Aristotle, Pliny, Ælian, Oppian, Gefner, Wotton, Belonius, Rondeletius, Salvianus, Aldrovandus, Johnson, Willoughby, Ray, Artedi, Klein, Pennant, 10—78. Language of, 431. Possess organs of hearing, 432.
 Florida, inhabitants of, more tawny than those of Canada ;—olive colour ;—women tall ; active, 232. Offered human sacrifices, 328.
 Fly. The house-fly may be kept awake, alert, and cheerful, through the whole year, 407. Language of, 434. Poisoned by the spider, instantly dies, 463.

- Fontana asserts, that animal poison, taken into the stomach, is hurtful;—Redi, that it is not, 461.
- Food of the human race, vegetables and animals;—of the Acridophagi, locusts, 208. &c.;—where precarious, the animal is capable of long abstinence, 457.
- Forfar (at) a she mule had a foal, 144.
- Formosa, its inhabitants have no resemblance to their neighbours the Chinese, 181. The women are not permitted to be mothers before the age of 35, *ibid.*
- Foulies, on both sides of the Senegal, form a shade between the Moors and Negroes;—follow the religion of Mahomet, and are hospitable, 211.
- Fox, quick senses, delicate sentiments, extensive language, compared to the wolf; raises his voice similar to the cry of a peacock, 422.
- Frezier's account of Chili, 239—240.
- Friendly Islands, Amsterdam, Middleburgh, &c. in the South Sea;—customs there, 314. Cut off the little finger as an offering in great distress, *ibid.*
- Frogs, mixtures of, may produce varieties, 151. Dormant in winter, 411. Experiment on, by Dr Monro, *ibid.*
- Funeral rites of Otaheite, 245.

G

- Galen, quoted 470, *et alibi.*
- Gander. See Goose, 429.
- Gauls offered human sacrifices, 237. Manner of doing so, *ibid.* In the time of Justinian, after the Christian religion was introduced among them, 332.
- Gemelli Carreri, an Italian who composed a voluminous work of imaginary travels, 180.
- Genera, the individuals included in a genus, ought not only to possess the general properties of the class, but also a family character and likeness, 5.
- Generation, theory of, according to Hippocrates, 79. See Theory. According to Aristotle, 81. To Aquapendente, 82. To Harvey, 83. Process of, in the hatching of eggs, 86, and 87. In deer, 88, and 89. Observations of Malpighius on, 90. Of De Graaf on rabbits, 93.—96. Of Valisnieri on the sow, 98;—the Cow;—the she-ass, 100. Wolves, dogs, and foxes, *ib.* Women, 101—102. How eggs give place to worms in spermatic fluids. New or vermicular theory of generation. Innumerable animalcules discovered by Leuwenhoek in the seminal fluid, 103. None in females, *ibid.* Fifty thousand of them not equal in bulk to a grain of sand,,

- sand, 104. Travel four or five inches in half an hour, *ibid.* Daleppatus, *ibid.* M. Andry's observations, 105. Both theories combated by Buffon, 106. Objections to the egg system by M. Mery, 108. Egg system supported by Duverney and Littere, 109. Experiment by Nuck inconclusive, 109—110. Buffon's theory of organic germs, 110—117. Bonnet's, *ibid.* Examples of multiplication without the intervention of sexes, vol. i. page 30. Inferior animals have the power of reproducing mutilated parts, 123. Generation still a mystery, 129. Absurdities of the vermicular theory, 131. Buffon's living organic particles liable to similar objections, 132. Effects of imagination on pregnant animals, 133. Of sympathy, 134. Of fear or desire, 135—140. Mules generally unprolific, 141. Buffon has rendered their fertility probable, 142.
- Georgia, famous for beautiful women, 200.
- Germans and Celts offered human sacrifices, and feasted on the flesh of the victims. Their supreme god, or one of the highest order, was always honoured with the sacrifice of an only son, 330. To Mercury, 332.
- Gefner (Conrad). His natural history of animals, a prolix compilation, alphabetically arranged, 4 vols. folio, published 1551,—1558, 24.
- Goa, natives of, olive coloured, 190. Goa, an opulent commercial city, 191.
- Goat fucker, or fern owl, ferenades his mate, 428.
- Goat superior to the sheep in mental powers, 420. Fond of caresses, 421. Capable of attachment ;—understands, when domesticated, what is said to him ;—has sounds expressive of his feelings ;—frolicsome ; seldom seriously mischievous, *ibidem.*
- Goose, her voice sounds somewhat like a trumpet, ;—*Item*, hisses like a serpent, 429.
- Goree Negroes, 214. Black, but handsome ;—food, fishes and millet, *ibid.* Drefs, a cotton cloth from the waist to the middle of the thigh, *ibid.*
- Goths, tall ;—hair white as silver ;—eyes bluish, 205.
- Graaf (De). See Generation.
- Grafshopper, a species of ventriloquist, 433.
- Greeks esteem large eyes and elevated eye-brows as great points of beauty, 204.—Offered human victims to Saturn, 326. Even in the days of Plato, 331.
- Greenlanders, 158. See Varieties, &c. Paint their faces blue and yellow, and wear pendants in their ears, 161. Offer their wives and daughters, &c. *ibid.* Bathe promiscuously, *ibid.* Are idolaters, *ibid.* Differ from the savages in Canada, 163.
- Guaden, on the frontiers of Senegal, the natives black, 199.
- Guan, one of the Mariana or Ladrone Islands ;—inhabitants seven feet high, 182.
- Guinea, inhabitants of ugly, emit an intolerable odour, 209. Paint their bodies red and

and other colours ;—paint a ring round their eyes, and different streaks on their faces ; wear an apron made of the bark of trees, covered with the skin of an ape, to which they fix little bells ;—lie upon rush mats ;—eat fish or flesh, yams and bananas ;—seldom arrive at old age, 214—215. Of limited capacity ;—tolerable mimics, very cunning ; will not reveal a secret ; gentle, humane, faithful, and brave, 218.

Guinea (New) account of its inhabitants, 183. See New Guinea.

Gustavus, 160. See Adolphus.

Guzaret, natives of, yellow, 190. More or less tawny according to the climate in which they live.

H

Hamsters or German marmots, 409. State of hybernation, *ibid.* To render them torpid, they must be excluded from all communication with the external air, 410. Manner of their awaking, *ibid.*

Hartsaeker. See Generation.

Harvey. See Generation.

Happiness, arising from the cultivation of the mind, counterbalanced by painful sensations, 453.

Hedgehog dormant during winter, 411. Experiment on, by Dr Monro, *ibid.*

Height. Mean height of the human species five feet, 240.

Hen, her language, variety of language, maternal affection, courage, &c. 430.

Hippocrates. See Generation.

Historical compositions of the ancients afford the finest topics for enforcing *duty, feeling, patriotism, liberty*, &c. 447.

Holland, New, or New South Wales, an account of its inhabitants, 184, 185. Tall, slender, black skin, crisped hair, ill eyed, ugly, and disgusting, *ibid.* Wear no clothing. Carve upon trees and rocks representations of animals, shields, weapons, &c. *ibid.* Bold and hostile, 283, 284. The shores abound with fish of various kinds, incredible numbers of green turtle, and oysters of different species, 285. The inhabitants of New Holland bear no proportion to the extent of territory ; greatest party, 14 or 15 men, 285. Middle size, well made, active, nimble, and vigorous ; voices soft and effeminate ; colour chocolate ; features not disagreeable ; teeth white ; hair long and black ; not infested with vermin. Ornament, a bone through the middle cartilage of the nose as thick as a man's finger, and six inches long. Necklaces of shells. A small string of plaited human hair round the waist. Paint. Have no fixed

fixed habitation, 286. Hovels. Food—fish, the Kanguroos, birds, yams, and fruits. Have no nets. Catch fish by striking, and with hook and line, 287. Weapons—spears and lances; some with four-barbed prongs, *ibid.* Canoes of bark; carry four persons, 288.

Hooke describes the sting of bees, wasps, &c. 466.

Horse lies not above two or three hours at a time. Seldom sleeps more than three or four in twenty-four hours. Some sleep standing, 402. Language of; five species of neighing. Understands words, 417. Horses arrange themselves under a chief, 418, 419.

Hottentots. See Caffres, 209. Nafty, but jealous of their liberty, 220. Different accounts of them, *ibid.* Natural apron of the women hanging down to the middle of the thigh, 221. Men half eunuchs by art, 222. Mode of deprivation, *ibid.*

House fly. See fly. May be kept all winter, 407.

Huaheine, an island in the South Sea. Natives taller and stouter than those of Otaheite. Women fairer and handsomer. Singular coffer, &c. 271.

Hudson's Bay savages small, ill made, and ugly, 230.

Hugon's account of the Chinese, 168.

Human nature still and every where the same, 347.

Human sacrifices, 320. Frequent in Otaheite, 321. The practice not confined to Otaheite; extends over a great number, perhaps the whole, of the South Sea islands. Instance of Tongabattoo 50 skulls, *ibid.* In the space of ten days another, 322. More frequent in the Sandwich islands than any other. Ten human victims destined to suffer on the death of a chief, *ibid.* In antient times the practice universal in Europe. Abraham offering Isaac, 323. Prohibition in Scripture, 324. Other instances in the sacred writings, *ibid.* The same practice prevalent among the Carthaginians in the days of Tiberius Caesar, 325. Themistocles sacrificed three boys to Bacchus, *ibid.* The Scythians sacrificed one out of every hundred prisoners to Mars, and drank their blood, *ibid.* Scalped the slain, 326. Contracting parties mutually drank each other's blood mixed with wine, *ibid.* Julius Caesar sacrificed two young men in the Campus Martius; Greeks to Saturn, Gauls, &c. *ibid.* Rome, Anno Urbis 657, prohibited the practice. Druids, 327. Gauls, *ibid.* Human victims sacrificed in Mexico, 328.

Human species, mean height of, five feet, 240. Two divisions of, from character, in the South Sea islands, the friendly, generous, and hospitable; and the barbarous, brutal, and hostile, 241. Possess three kinds of language, 437. Comparison of, *ibid.*

Hydrophobia, or dread of water, 471. Case of, 472. Cured by the cold bath, 478.

I J

- Jaloffs are Negroes between the Senegal and Gambia. Exceedingly black, handsome, and of good stature. Have the same ideas of beauty as the Europeans, colour excepted. With them a glossy black is the indispensable basis, 212.
- Japanese similar to the Chinese, but darker in colour, haughty, warlike, civil and obliging, vain and inconstant, yet supple, with incredible patience, the hardships incident to human nature, 170. Like the Chinese, eat their victuals with small sticks. Are laborious and skilful artificers, 171. Their women, like those of China, have excessively small feet, *ibid*.
- Java, inhabitants of, different from those of Malacca and Sumatra. Resemble the Chinese, except in colour, red mingled with black, 177. Resemble the inhabitants of Brazil, *ibid*. Chacrelas in Java a distinct race, 178. Natives of Java have not the least colour in the cheeks of either sex. Miserable. Might be made a delightful residence, 294. *Running a muck*, 295. Religion of the Javanese. Propitiate the evil being, whom they denominate *Satan*, by meat, money, &c. Believe women frequently bring forth crocodiles as twin-brothers to their sons. Put victuals into the river for their amphibious relations, 296. Periodical ceremony in honour of crocodiles, 297. Chinese numerous in Java as artificers and cultivators. Their industry laudable; but their sole principle is the love of gain, *ibid*. In manners obsequious; in dress extremely clean. Easily satisfied with food. Eat every thing animal or vegetable, 298. Burial and funeral ceremonies, *ibid*. The slaves in Java are procured from the other eastern islands. Have the vices of other slaves. Are under the dominion of their owners for any punishment they may chuse to inflict short of death, 299.
- Jeffo to the north of Japan. The inhabitants a gross and brutal race, totally different from those of China and Japan; indolent and slovenly. Live on the oil and blubber of whales. Their children go naked. Their women paint their lips and eye-brows blue. Resemble the Samoiedes or northern Tartars, 171.
- Imagination, supposed effects of, on pregnant animals. Endeavours to complete any scene or set of ideas about which the mind may be occupied, 365. Circumstances or situations that weaken our reasoning or reflective powers, or prevent external impressions, give force and activity to imagination, *ibid*.
- Incubus, 403. See night mare.

Indians, sweat of, not offensive to the smell like that of the African Negroes, 191.

Indians of Peru, on the sea coast, copper-coloured, 237 ;—in the elevated parts of the country, white, *ibid.* ;—of Guiana and Amazons river, tawny reddish, *ibid.*

Janigo Diervillas's account of the Chinese, 169.

Insects, authors who have treated of, Wotton, Aldrovandus, Jonston, Ray. By intermixture new species may probably be produced, 152. Language of, 432. Pleasure and pains of, 458. Lives short, but full of enjoyment, *ibid.* Those without wings slower in their motions, but perhaps not less happy, *ibid.* Their multiplicity hurtful to man and other animals, 459. Their enemies innumerable, *ibid.*

Invention oft the offspring of accident, 149.

Johnson (Dr Samuel's) definition of the *second sight*. His dislike of Presbyterian church-government. His encomium on the Highland clergyman. His observations on the *second sight* ;—that it is useless, without any *visible* reason, or *perceptible* benefit ;—confined to the mean and ignorant, 385.

Jonston (Dr John) a Polish physician, published at Amsterdam, in 1657, an abridgement of *Gesner* and *Aldrovandus*, &c. His arrangement, 35, 36.

Isthmus of America natives of good stature and shape. Women short and squat. Both sexes round faces, flat noses, large grey eyes, thin lips, white teeth, long black hair, colour tawny, 235. Another species—colour milk white. A short white down covers the body, and almost conceals the face. Eye-lids of the form of crescents with the points turned downwards. See best by moon light, *ibid.*

Julius Caesar offered two human victims in the Campus Martius, 326.

Jumar, a production between a bull and a mare, or a bull and a she-ass, uncertain.

Buffon records the junction of a bull and a mare, but without offspring ;—from the jack-ass and cow, asserted by Dr Shaw, 143. See *Leger*.

K

Kabardinski Tartars beautiful, 167. See *Tartars*.

Klein (Mr) 1740. His arrangement of quadrupeds, 50. Birds, 51. Fishes, 52, 53. Reptiles, 53, 54.

L

Ladrone or Mariana Isles, an account of, 182. Inhabitants tall, robust, and well-proportioned. Remarkable for their longevity, *ibid.*

Language

- Language soft and harmonious in proportion as we approach the equator, 260. Examples of the language of Otaheite, *ibid.* Language of beasts, 413; birds, 426; reducible to a musical key, 427. Of owls very expressive. Language of fishes, 431;—of insects, 432;—of the grasshopper, 433;—of bees, *ibid.*—of the house-fly, 434;—of the spider, 435, 436;—of the human species, 437. Comparison of, *ibid.*
- Land-tortoise a long-lived animal. Singular habits of one that lived above forty years in a little walled court, 406.
- Laplanders, 158. (See varieties of the human species.) Dart a javelin with amazing force and dexterity, 160. Gustavus Adolphus wished to embody a regiment of them, but gave up the attempt, *ibid.* Are idolaters. Keep black cats, to whom they communicate their secrets, *ibid.* Resemble not the Fins, Goths, Danes, or Norwegians, 163. Laplanders of Davis's Straits diminutive; olive colour; thick short legs; expert fishers; eat their meat perfectly raw; drink water, or the blood of sea-dogs; are robust, and live to a great age, 229.
- Lee Boo, Prince of Pelew, account of, 341.
- Legat (Francis) account of Java, 177.
- Leger (M.) has described particularly the jumar from the bull and she-ass, and from the bull and mare, 142. See Merollo.
- Le Maire's account of the Papous and New Guinea, 183.
- Lettres Edifiantes, 177.
- Leuwenhoek. See Generation.
- Lime-water and oil of turpentine good against the bite of a viper, 462.
- Linnaeus, 1735,—1767. 13th edition by Gmelin in 1788, page 54. Arrangement. Mammalia, 55. Birds, 56. Amphibious, 56. Fishes, 57. Insects, *ibid.* and 58. Has given credit to the story of men with tails, 180; and that the Orang Outang speaks with a hissing sound. No proper evidence of this fact, 423.
- Lister (Dr) his history of canine madness, 473.
- Littre (M.) a supporter of the egg system of generation, 109.
- Lizards, mixtures of, may produce varieties, 151. Of these there are 77 species, all innocuous, 479.
- Loango singular mode of sepulture, 216.
- Loquacity necessary in nurses, 442, 443.
- Loubere's account of the Siamese, 174.
- Lycurgus abolished, at Lacedemon, the horrid rite of sacrificing human victims, 331.

M

- McNicol's remarks on Dr Johnson, with regard to the second sight, 388, 389.
- Madagascar, natives of, not Negroes but Caffres, 209.
- Mad dog, bite of, its effects usually appear in 15, 16, 30, or 40 days; sometimes not till 11 or 12 months after, 472. Symptoms, *ibid*. Effects, 473. Prescription by Mead, 477. Ormkirk medicine, 479. Tonquin, *ibid*.
- Madness might probably be abated by music, 468.
- Malabar coast, natives of, blacker than those of Coromandel, which are blacker than those of Bengal, 187. Same size with the Europeans; have long smooth black hair; wear rings in their noses, *ibid*. Bathe promiscuously. Marry at eight, *ibid*.
- Malacca, account of the natives, 176.
- Malays, colour of, red mingled with black, 177.
- Maldiva islands, inhabitants of, 190.
- Malegaches, or Madecasses, natives of Madagascar. Rice is their chief article of food. The Arabs, who conquered the island about three centuries ago, taught them the art of writing, 227. Singular customs and opinions, 228, 229.
- Males more loquacious than females, 437. Exception, *ibid*.
- Malimba in, the husband ennobled by the wife, 116.
- Malpighius. See Generation.
- Mammalia, 55.
- Man superior to all other animals, not from colour or form, but by his mental powers, 347. Not the only animal that dreams, 401. See Dreaming. About to sleep, lies on his side, 402. Sleeps longer than most of the larger animals, *ibid*. Might perhaps become torpid and recover, if guarded against the fatal effects of cold, 412. Female more loquacious than the male, 440. Female speaks a year sooner, *ibid*. Final cause, *ibid*.
- Mandello's account of the inhabitants of the Moluccas, 179.
- Manilla inhabitants much diversified. Negroes different, *ibid*.
- Mare. Night mare. Cause of, &c. 403.
- Mariana or Ladrone Islands, 182.
- Marmots, Alpine, sleep during the winter, 406. Those tamed and fed in houses do not become torpid, *ibid*.
- Marquesas Islands in the South Sea, &c. 315. Inhabitants the most handsome race of people of any in the South Sea, *ibid*.

- Marquis de Sponte Beaufort obtained four puppies from a she-wolf and mastiff-dog, 142.
- Marriage a civil contract in the Pelew Islands, 338.
- Mead (Dr) on poisons, 467, 468, 470, 472. His prescription for canine madness, 477.
- Melancholy might probably be relieved by music, 468.
- Mery's (M.) objections to the egg system of generation, 108.
- Merollo asserts the existence of the *Mar* from the bull and she-ass, 143. See Shaw (Dr)
- Method useful and necessary, 1, 2.
- Mexico and Peru inhabitants of a mixed breed. Genuine natives olive brown, nimble, and well proportioned; long black hair, 234, 235. Offered human victims in sacrifice, 328.
- Mimes, the tribe of Negroes most resolute, but capricious and apt to despair, 218.
- Mind checked in its progress by improper modes of education, 446. When cultivated, grasps at still greater acquirements, 453. The more it is cultivated, the more acute are its feelings, 454.
- Mindanao, one of the Philippine islands, an account of its inhabitants by Dampier, 180.
- Mingrelians equally handsome and beautiful as the Circassians and Georgians, but have many bad qualities, 202.
- Mogul*, in the Indian language, signifies *white*. Moguls in features resemble the Europeans, 186. Their women have their legs and thighs long, and bodies short, *ibid*. Have no hair on any part of their bodies. Are chaste, and very fruitful. Have easy labour. The men have very scanty beards. Marry at ten; the women at eight. Become old and wrinkled at thirty. Puncture and paint their skin with the juice of plants, in imitation of flowers, 187.
- Molucca Islands. The inhabitants resemble those of Sumatra and Java in language, manners, customs, arms, and colour, 179. Mandello's account of them, *ibid*.
- Mondongo Negroes the most cruel and ferocious, 218.
- Monkey, about to sleep, lies on its side, 402.
- Monomotapa, Negroes of, tall, handsome, and have fine features. Emit no bad smell. Can endure neither hard labour nor servitude, 224.
- Monro, (Dr Alexander) an experiment of his on the hedgehog and frog in their dormant or torpid state, 411. Has demonstrated that fishes have organs of hearing, 432.
- Moors, to the north of Senegal, live by pasturage, free and independent. Are meagre, of small stature, but sly and ingenious, 211.

- Mofambique Negroes, inhabitants of, have no bad smell, 209. Go perfectly naked. Eat the flesh of elephants, 224.
- Motion requires exertion ;—is productive of pleasure, vigour, and health, 458.
- Mules unprolific, 141. Buffon has rendered their fertility probable, 142. Mules from a she-wolf and a mastiff, 142. Aristotle says that the mule coupled with the mare, and produced an animal, called *binnus* ; and that the female mule readily conceived, but rarely brought forth her fruit to perfection, 143. A female mule brought forth a foal in 1769, *ibid*. Mules seldom produce in warm regions, never in cold. She-mule prolific by a horse, 144. Hybrid birds prolific, 146. Mules of prolific animals, the sow, rabbit, &c. may probably produce new species or varieties, 151. Also in frogs, lizards, and reptiles, *ibid*.
- Multiplication of the human species, union in a social state, the principal cause of, 131.
- Music a remedy for the bite or sting of the tarantula, 467. Might be tried in melancholy and paroxysms of madness, 468. Case of Saul, 469. Ischiadic pains cured by music, 470. Bite of the viper, 471. Pestilence, *ibid*.

N

- Naires. See Calicut.
- Nago Negroes the most gentle and humane, 218.
- Names, a few great ones give currency to hypothetical opinions, 150. See Authority.
- Natal beyond the Cape of Good Hope, 223.
- Nature not disjointed and incongruous, 3.
- Natural History, authors who have treated of. See Authors.
- Negroes in Manilla, different from the other inhabitants, 179. The hair of some crisped ; of others long, *ibid*. Negroes of Arada and Juda, 215. Negroes in full health black ;—when sick become copper coloured or yellowish, 217. Qualities of, 218, 219. White, 236.
- Negro-land comprehends. See page 209.
- New Guinea, description of, 288. Rencontre with the natives, *ibid*. Like the New Hollanders, all stark naked ;—strange artificial fire-works, 289.
- New Guinea, New Holland, &c. See Guinea, &c.
- Newfoundland savages like those of Davis's Straits, 230.
- New South Wales, 283.

New Zealand. See Zealand.

Nicobar Islands, north of Sumatra ;—account of the natives, 176.

Nicol. See M^cNicol.

Night-mare, 403. See *Mare*.

Nocturnal, a register of dreams, 376. Specimen, 377.

Nootka Bay, Prince William's Sound, account of, 357. Inhabitants short, square, high cheek bones, flat noses, white teeth, dark eyes, quick sighted ;—women rosy coloured cheeks, paint their faces, bore their ears and noses, slit their under lips ;—various ornaments ;—dress, the skins of beasts ;—friendly ;—affectionate to their wives and children ;—jealous of strangers ;—steal weapons, daggers, and long pointed spears, 359. Fur trade valuable, 360.

Normans offered human sacrifices, 332.

Nubians, a species of Negroes, 207.

Nuck, 109.

Numidians rather tawny than black, the men meagre, the women fair and jolly, 199.

Nurses, loquacity in them a necessary accomplishment, 442, 443.

O

Ohiteroa, an island in the South Sea, 275. Attempt of the natives, —hostile, 276. Lusty and well made ;—weapons, &c. *ibid*.

Oil (see turpentine) remedy against a viper.

Ominous dreams considered, 381.—Fortuitous, 383.

Oppian's poems on fishing and hunting, in which a vast variety of fishes and quadrupeds are described, with the history of their manners, dispositions, and oeconomy, 23, 24.

Orang Outang, apes and monkeys, imitate almost every human action, 423. But there is no proper evidence of their speaking ;—by their chattering one may learn their intentions and emotions. Though the orang outang has the same organs of speech as man, he never attempts to articulate, 424.

Orders, intermediate divisions between classes and genera, 6. Naturalists have differed most widely in the formation of orders, *ibid*.

Ormskirk medicine for the bite of a mad dog, 479.

Ormus, natives of, brown and tawny, 192.

Oftiacks, 158. See Varieties, &c. Seem to be a less ugly branch of the Samoides ;—feed upon raw flesh or fish ;—eat every kind of animal ;—for drink, prefer blood to water, 163 ;—inhabit under the 60th degree, *ibid*.

Otaheite,

- Otaheite, inhabitants of the friendly class of South Sea Islands, 241. Their habitations roofs without walls, 242. Custom of dressing a stranger in their clothes;—green boughs symbols of peace and friendship, 243. Thievish, 244. Their funeral rites, 245. Wound themselves in their paroxysms of grief, 246. Minstrels, *ibid.* Mori, a pyramidal building of stone, 247. No combs;—eat the vermin, 248. In every other particular delicate and cleanly, *ibid.* Tattow or stain their bodies with punctures and lamp black;—clothes of two kinds, one matting, the other a preparation like paper, 248. No covering on legs or feet, 249. Shade their faces with little bonnets. Tomau, an ornament for the head, of human hair; pieces of it above a mile long without a knot, *ibid.* Five or six of these are sometimes wrapt round the head of one female, *ibid.* Feathers and flowers used for ornament, *ibid.* Ear-rings on one side only, *ibid.* Children go naked, 250. Roof rests on three parallel rows of pillars nine feet high;—eaves three and a half;—floor, day and night blocks of wood for pillows;—one stool for the master of the family, *ibid.* Except when it rains, they eat in the open air, 251. Food, vegetables, hogs, and dogs, and fish, *ibid.* Drink water, or the juice of the cocoa-nut, 252. Eat apart individually, 253. Musical instruments, flutes and drums, *ibid.* No idea of modesty, 254. Dance Timorodee and Arreoy, *ibid.* All basket makers, 256. Make ropes and fishing lines of bark, and seine nets of grass, *ibid.* Build boats; tools an adze of basaltic stone, a chissel or gouge of bone, a rasp of coral;—the skin of the sting ray, with coral sand, as a file or polisher;—canoes from ten to seventy-two feet, from one to two feet wide;—two of these lashed together about three feet asunder, with a platform over both, 257. Missile weapons, slings and spears, *ibid.* Wonderful prognosticators of the weather;—distinguish the stars by names, 258. Thirteen moons;—day into twelve parts;—reckon to two hundred. Measure, a fathom;—reckon great distance by time;—language soft and melodious;—specimen;—that of Otaheite of great extent;—cutaneous eruptions nearly approaching leprosy, 262; and latterly a worse disease, 264. Religious notions, 265, 266, 267. Marriage and circumcision, *ibid.* Government, 268. Ranks, &c. *ibid.* Succession of honours, 269. War, *ibid.* Punishment, 270.
- Quarines, a large species of American monkeys, distinguished by the appellation of Preachers, 425. Harangue, &c. *ibid.* and 426.
- Wrighton, voyages de, account of Aracan, 175.
- Owls, language of, very expressive and various, 428.
- Ox, his slumbers light and short, 402. Generally lies on the left side;—his left kidney larger and fatter than the right, *ibid.* Language limited, 419.

P

- Pain and pleasure mental or corporeal, 445. Sometimes spring from the same source, 454. Pain itself a source of pleasure, 460.
- Palafoxe's account of the Chinese, 169.
- Papous, an account of, 183.
- Paraguay, natives tall, countenance long, skin olive ;—civilized by the Jesuits, 238, 239.
- Parennin's account of the Chinese, 170.
- Parrot kind possess a great range of modulation of voice, 428.
- Patagonians, a gigantic race ;—their existence doubtful, 240. Account of by Commodore Byron, 353. By Captain Wallis, 354. Size six to seven feet, 354. Dexteros in the use of a singular weapon, 355.
- Peacock, voice of, harsh and grating, 429.
- Pelew or Palos Islands, 335. Inhabitants of a deep copper colour ;—go naked ;—middle size, handsome, tattooed ; regard hair on any part, except the head, as an instance of great indelicacy ; friendly, 336. Marriage among them a civil contract held inviolable ;—polygamy permitted ;—wives, when pregnant, sleep not with their husbands, 338. Mode of burying the dead, 339. Patterns of humanity and moral rectitude, *ibid.* Instance of superstition, *ibid.* Believe in a future state of rewards and punishments, 340. Kill their prisoners taken in war, 341.
- Pelopidas about to sacrifice a virgin, substitutes a mare, 331.
- Pennant follows but improves upon Ray's arrangement, 74.
- Persians resemble the Moguls, 191. Northern provinces fairer than the southern, 192. Xenophon says they were in his time a people thick and fat : Marcellinus that they were meagre and thin : Chardin that the Guebres, a remnant of the ancient Persians, are ugly, ill made, and rough skinned. From intermarriages with the natives of Circassia and Georgia, the Persians are much improved, 193.
- Peru, Indians of, on the sea-coast, copper-colour, 237. Elevated plain between the Cordilliras ;—white, *ibid.*
- Pescara, a town in Africa, deserted in summer on account of the scorpion, 464.
- Phillip (Governor) account of New South Wales, 175.
- Philippine Islands, inhabitants of much diversified ;—this diversity accounted for, 179 ;—have a resemblance to the Malays, 181.

- Phrygian melody used for the cure of ischiadic pains, 470.—To heal the bite of vipers, 471.
- Pigafetta's account of the inhabitants of Java, 177.
- Pigeon, his coo amorous and plaintive, 428.
- Pigmies in Mauritania, Constantia, and Bugia, set a watch ;—give a signal by a cry, &c. 424. And alarm by a scream, 425.
- Pindar notices the happy effects of music, 470.
- Pissagan, an island sixteen leagues west of Sumatra ;—natives, an account of, 176.
- Pleasure and pain arise from two sources, 445. Pleasure derived from the acquisition of knowledge counterbalanced by pain, 453. Causes of pain augment in quadruple proportion, 454. Pleasure and pain from business, *ibid.* From sexual attachment and its consequences, *ibid.* Pleasure and pain of brute animals, 456. Equitably distributed, 459.
- Pliny the elder, defects of ;—his merits ;—antient naturalists were distinguished by grandeur and elevation of sentiment ;—exalt our ideas of nature, and are solicitous to show that all her productions answer some useful purpose to mankind, 18, 19.
- Aburdities in Pliny's history of animals, 20. Confusion, 21.
- Poison, a relative term, what is hurtful to one species of animals salutary food to others, 461.—Taken into the stomach whether noxious, *ibid.* Poison of serpents virulent in proportion to the heat of the climate, 464.
- Pollock (James) bit by a mad dog, 472.
- Polypus, fresh water, poisonous, 463. Has no teeth or other instrument that could pierce the skin, *ibid.*
- Pope and the catholic hierarchy, 349. Sale of absolutions and dispensations the means of enriching, *ibid.*
- Population the result of society, 231.
- Portlock's (Captain) account of Nootka Bay and Sound, 359.
- Position chosen by animals about to sleep, 401.
- Poultry possess the most copious language of all domestic birds, 430. Curious fact relative to, 431.
- Pregnancy. Females in that state affected by desire or by fear ;—Effects of imagination in that state, 133, 140.
- Prejudice a bar to improvement, 149.
- Premature study painful, 453.
- Prescription, Dr Mead's, for canine madness, 477.
- Preventative remedies for canine madness, 475.

Priests love good eating, 333. Means of gratifying this appetite, *ibid.*

Printing, happy effects of the invention of, 350.

Progress of superstition respecting the victims offered in sacrifice, 333.

Progress of the mind checked by improper culture, 446.

Progress and feelings of a well informed mind, 453.

Prophetic power. See Second Sight, 385.

Psittacus galgulus, a species of parrot;—when about to sleep hangs itself by one foot on the branch of a tree, 402.

Pythagoras said to have been the inventor of music as a cure for disease, 471.

Pyrrard's account of the Molucca Islands, 179.

Q

Quadrupeds. In these the characteristic signs are taken from the feet, teeth, paws, parts of generation, &c. 7. Authors who have treated of, Aristotle, Pliny, Ælian, Oppian, Gesner, Wotton, Alrovandus, Jonston, Ray, Klein, Buffon, Brisson, Pennant, 7—77.

R

Rapacious animals, food of, precarious—hence endowed with the power of long abstinence, 457. Have courage, artifice, patience, &c. *ibid.*

Raven, different notes of, 428.

Ray (Rev. John) in 1693, published his synopsis of Quadrupeds and Serpents : in 1710, his Insects : in 1713, his Birds and Fishes, 44. Arrangement, 44—48.

Reaumur, 126. See Reproduction, *infra*. Describes the sting of the bee, &c. 466.

Redi asserts that the poison of serpents taken into the stomach is not deleterious, 461.

Reformation, happy consequences of, 350.

Religion, traces of it every where to be found, though frequently sinking into superstition, 347. Affected by climate, *ibid.*

Remarks on the bite of a mad dog, 471.

Reproduction of parts lopped off, 123. Supposed causes of;—experiments on earthworms, 123—125. On fresh water worms, 126. M. de Reaumur's exactness and sagacity in tracing the reproduction of the claws of cray-fish, 126. Process, 127. If the tail be cut off, the animal survives it a few days only, 128.

Reptiles. See Serpents. Klein treats of, 54. Pennant, 75. Mixture of reptiles may produce, 151.

Rochon's account of Madagascar and Cochin China, 173.

Roebuck less frequent, loud, and strong in his cry than the stag ;—young ones utter a short and plaintive cry ;—easily imitated, by which their mothers are often deceived to their own destruction, 423.

Romans prohibited human sacrifices by a law made in the year of the city 657. See page 327.

Rondeletius, a professor of medicine at Montpellier, published in 1554 a vol. on fishes, *de piscibus*, 29. Arrangement, accuracy, and fidelity, *ibid.* and 30.

Rooks in the breeding season make clumsy attempts at singing, 428.

Russians, previous to the reign of Peter the Great, were ignorant, brutal, and cowardly ;—men and women went promiscuously into the same bath, &c. 206.

S

Sacrifices human, Otaheite, 320. Instances of the same practices from sacred Scripture, 324.

Saint Leger, 142. See Leger.

Salvianus Hippolitus, professor of medicine at Rome. In 1757, published a folio volume, entitled, *Aquatilium Animalium Historia*, with figures drawn from the life, and engraved with surprising taste and elegance, 30.

Samoiedes, 158. See Varieties, &c. Have no similarity to the Russians, 163. Inhabit 68th or 69th degree, *ibid.*

Sanchez (M.) travels in Tartary, 1735—1737, 166.

Sandwich Islands, human sacrifices frequent in, 322.

Savu, an island in the South Sea, 289. Savu 10° south, rich in vegetables and animals ; natives rather below than above middle size ;—women short and squat, dark brown hair black and lank ;—men well made, vigorous and active, 289. Eradicate the hair from their armpits and beards ;—wear garments of cotton cloth dyed blue ;—a variety of ornaments, chains of gold wire round their neck, bracelets ; the women girdles of beads round their waists. Both sexes have their ears pierced. Some men wear rings of ivory two inches broad, and about an inch in thickness round their arms above the elbow. Names traced on their arms, 290. Houses from 400 to 20 feet long ;—food every tame animal in their possession, but prefer dogs and cats to sheep and goats ;—make a kind of wine ; chew betle and areca, with lime and tobacco, 291. Rank and political establishment ; their pride, a respectable pedigree ;—stones of memorial, 292. Religion, paganism ;—excellent morals, *ibid.*

Scolapendra,

Scolapendra, or centipes, poisonous, 463.

Scorpion, chief of the stinging animals, infuses a poison into the wound, 464. Poison of, virulent in proportion to the heat of the climate, *ibid.* Poison of, exhausted after two or three attacks, 465. Stings itself to death when it cannot escape, *ibid.* Kill and devour each other, *ibid.*

Scythians sacrificed to Mars one of each hundred prisoners, 325.

Second Sight, or prophetic power, 385. The effect of situation and circumstances;—their predictions, or rather reveries, are all expressive of deaths, or other human calamities, 385. Specimen, 386. Dr S. Johnson's definition of this faculty;—admits that it is useless;—confined to the most mean and ignorant;—not prescience;—Mr M'Nicol's account of it in his remarks upon Dr Johnson's journey, 388, 389. The belief of it nearly extinct even in the western islands, *ibid.*

Sedentary life gives rise to diseases, 445. Stone, gout, consumption, want of appetite, &c. *ibid.*

Semnonen in Germany, a human victim on certain occasions, 332.

Senegal, negroes of, not so strong as those of Guinea, but more ingenious, 217.

Sepulture, rites of. In the Pelew Islands the body is wrapped in a mat, carried in a bamboo machine on the shoulders of four men, attended by female mourners making loud lamentations, 339.

Serpents, authors who have treated of, Aristotle, Pliny, Ælian, Wotton, Aldrovandus, Jonston, Ray, Klein;—their poison, when taken into the stomach, asserted by Fontana to be noxious; by Redi to be innocuous, 461. Poison of, virulent in proportion to the heat of the climate, 464. Number of species, 218, of which only 32 are poisonous.

Shaw's (Dr) authority for the jumar from the jack-ass and cow, 143.

Sheep represented by Buffon as the most stupid of quadrupeds, 419. This charge not altogether just, 420. Seek the protection of the shepherd and dog, *ibid.* Language, *ibid.*

Siamese, account of, 174. Their forehead contracts suddenly;—like the chin ends in a point;—long ears a favourite ornament with them and other eastern nations;—pierced; descend to their shoulders, *ibid.* Account of, by Struys, by Tachard, 175.

Silk worms, proposed method of rearing them in Britain, 154. A mixed breed, *ibid.* Objections answered, 155. May be the means of raising a fortune, and making a name immortal, 156.

Similarities in the external form and internal structure of quadrupeds, 4.

Similarity insufficient for classification. Dispositions, manners, instincts, and oeconomy, must be studied, 7.

- Skates of the Laplanders two yards long, 160;—of the Samoiedes two feet, *ibid.*
- Sleep, its causes and consequences, 361 *et seq.* Almost every animated being subjected to its power, 409. Some animals require more, some less. Many sleep all winter, *ibid.*
- Sloth, real pain, 459.
- Sluggish motion of snails and earth worms, 459.
- Snails and earth worms have their food before them, *ibid.*
- Society Isles in the South Sea, 315.
- Sofala, inhabitants of, have no bad smell, 209.
- Somnambulists. A striking instance, 391. Conversation, 392. Mode of awaking, 393. Another instance, *ibid.* A third instance, 394, where the somnambulist read and wrote without the use of his eyes. Devaud, a fourth instance, 395; 6, 7. A treatise on somnambulism, under the title of *A True and Surprising Account of a Natural Sleep Walker*, read before the Philosophical Society of Laufanne, 1788.
- Sorrel an antidote and cure for canine madness, 476.
- South Sea Islands, inhabitants of, divided into two classes, namely, the friendly, generous, and hospitable; and the barbarous, brutal, and hostile, 241. Sacrifice human victims, dogs, hogs, &c. 321.
- Spaniards meagre but handsome;—from the operation of the sun and air swarthy and tawny, 205.
- Sparrows, a remarkable instance of parental attachment, 438, 439.
- Spiders, and some other insects, when about to sleep suspend themselves by the fore-legs, 402. Language of, 435, 436. Amours of, *ibid.* Possess a very subtle poison, 463, infused by its proboscis, *ibid.*
- Squirrel (fat) torpid in winter, 407. Its temperature, *ibid.*
- Sting, structure of, in bees, wasps, and hornets, accurately described by Hooke and Reaumur, 466.
- Stinging animals, *ex. gr.* the scorpion, infuse a poison into the wound they make, 464.
- Stomach requires to be alternately filled and emptied, 362.
- Struy's account of the Siamese, 175.
- Sumatra, an account of the natives of, 176.
- Superstition desolates the South Sea islands, 322. Arises from a thousand natural causes, 385.
- Swallow, by a shrill alarm, warns his species of the approach of the hawk, 428.
- Sweat of the Indians not offensive to the smell like that of the African Negroes, 191.
- Swedish women prolific; produce 8, 10, or 12 children; 18, 20, 24, and even 30,

not uncommon. Men live to 100, 140, or upwards. More remarkable for longevity than any other nation in Europe, 206.

Swine sleep longer than most quadrupeds, 402.

Sympathy, its effects on human bodies. The bond by which Nature attaches mankind to each other, 134.

T

Tachard's account of the Siamese, 175 ;—of Java, 177.

Tacitus's account of the Germans offering human sacrifices, 332.

Tails. It is said, that, in the Manilla and Philippine Islands, men have been seen with tails, 180.

Tanna, Island of, women carry all the burdens, 320.

Tarantula, the large spider of Apulia, poison of, 466. Effects, and method of cure, *ibid.* and 467.

Tartars, (northern) 158. See Varieties, &c. along the Wolga, in the 55th degree, a gross, stupid, and brutal people, 163. Have no ideas of religion. Will not marry young women till they have had intercourse with other men, *ibid.* Inhabit vast regions. Even when young have wrinkled foreheads, 164. Noses broad and short; eyes small and sunk; cheek-bones high; lower part of the face narrow; chin long and prominent; upper jaw falls in; teeth long, and stand asunder; eye-brows cover the eyes; face flat; skin tawny; hair black; beards scanty; hair disposed in tufts; all wander; live in tents; eat the flesh of horses, raw or putrid, and dried fish; drink mares milk fermented with the flour of millet; shave their heads except a small tuft. Women wear their hair, and adorn it with ornaments of copper. All robbers, &c. *ibid.* Tavernier informs us, that the Calmuck Tartars, in the vicinity of the Caspian Sea, have something frightful in their countenance; flat faces; small eyes, five or six inches asunder; instead of regular nostrils, two holes; their thighs bend outward, and their legs inward, 165. Those of Daghestan hold the next rank in deformity. Little Tartars of Nogai, in the neighbourhood of the Black Sea, not so ugly, 165. Siberian Tartars differ in language. Eastward their features soften. The Mongou Tartars the most polished of all the race, *ibid.* Those of Thibet, and other southern regions, also less deformed, 166. Kabardinski beautiful;—300 men of them in the Russian service, 167;—are said to have migrated from the Ukraine to Kabarda about two centuries ago, *ibid.*

Tavernier's account of the Tonquinese, 174.

Teachers,

Teachers, incapacity of, 447.

Terror may produce derangement in the structure of a foetus, but cannot produce a likeness or resemblance of the object exciting it, 135.

Tertre (Father du) *Histoire des Antilles*, 233.

Thales of Crete said to have removed the pestilence by music, 471.

Theophrastus on Enthusiasm quoted, 470.

Themistocles sacrificed three boys to Bacchus, 325.

Theory of generation. See Generation. Harvey's system of eggs, Leuwenhoek's homunculi, Buffon's living organic particles, and Bonnet's infinite series of germs.

Theory,—author who refutes more useful than he who invents one, 150.

Toad not poisonous, 479.

Tongataboo, one of the South Sea islands. Custom of beating till one fall asleep, 319. Continue beating during sleep, 320. Human sacrifices, 321.

Tongusians have no ideas of religion;—will not marry young women till they have had intercourse with other men, 163.

Tonquinese, Dampier's account of, 173. Complexion delicate; visage flat and oval, *ibid.* Nose and lips well proportioned; teeth black by art. Tavernier's account of, 174.

Tortoise. See Land Tortoise.

Transit of Venus, 245.

Tripoli, though adjacent to Egypt, its inhabitants tall; have no resemblance to the Egyptians, 196. Moorish ladies wear very long hair; are mothers at 11; grandmothers at 22; cease to have children at 30; but live as long as the Europeans.

Tullo (David) attests a she-mule having had a foal, 145.

Turkey-cock utters a gobbling noise; makes a humming sound with his wings, 429. Her brood understands the language of the Turkey-hen, and provide for their safety, when she gives the alarm, 430.

Turks, from the slaves they procure from all places, are a mixture of all nations, 203. Neither males nor females suffer any hairs to grow on any part of their bodies except the head and face; have fresh complexions, a smooth and delicate skin, &c. 204.

Turpentine, oil of, good against the bite of a viper, 462.

U

Ulistea, an island in the South Sea. Singular buildings, arks, and offerings, 272. Model of a canoe; jaw-bones trophies of war, *ibid.* Dress, dancing, music, and drama, 273.

Union in the social state tends more than any other circumstance to increase population, 231.

V

Valifnieri. See Generation.

Van Helmont saw a case of hydrophobia cured by submersion, 478.

Varieties of the human species, 157. Different shades of colour, *ibid.* Deepest black in the Torrid Zone, 158. Gradually lighter to the outward verge of the Temperate Zones; darkens again toward the poles, *ibid.* The most northerly seem a distinct race, *ibid.* and 159. Characters—broad large faces, flat noses, eyes of a yellow brown, inclining to black, cheek-bones prominent, mouths large, lips thick and reflected, voice squeaking, head large, hair black and smooth, skin of a tawny hue, *ibid.*; breasts long, nipples black; stupid, superstitious, void of modesty, want courage; manners; are seldom sick; live to a great age, &c. 160. Of the Tartars and Chinese, Siam and Cochin-China, the Tonquinese, &c. See Tartars, &c. Colour and conformation mark most varieties. The most singular and incredible is that of men with tails, said to be found in the Manilla and Philippine Isles, 180. The women among the Papous and in New Guinea, according to Le Maire, have breasts hanging down to their navel, prominent bellies, limbs and arms small, and features resembling those of apes.

Venomous liquid taken into the stomach, its effects, 461.

Viper may be kept awake during the winter, 407. Bite mortal, 462. Remedy, *ibid.* Kill each other, 465. Bite cured by music, 471.

Vulgar as happy as the learned, 455. Causes, *ibid.* and 456.

W

Wafer's account of the Isthmus of America, 235.

Wales, New South, inhabitants of have no clothing, yet have some ideas of sculpture, 185.

War coeval with the existence of man, 351. Causes of, *ibid.* Inquiry after the final cause of, 352.

White Negroes, 236.

Willoughby (Francis, Esq;) died in 1672, aged 37. His Ornithology published by Ray in 1678, 367. His arrangement, 38—40. Fishes, 40—42.

Wilson (Captain) of the Antelope, wrecked on the Pelew Islands in 1783, well treated by the natives, 335.

Wives and daughters offered to strangers. This strange custom of the northern nations accounted for, 162.

Woodpecker utters a species of laugh, 428.

Worms. Pennant treats of, 76. See Reptiles. Under this head Pennant considers shell-fish, 77. Poisoned by the fresh-water polypus, instantly die, 462.

Wotton, &c. See page 84.

Wotton (Edward) of Oxford, published in 1552. His method, 26. His style unaffected, concise, and elegant, *ibid*.

Wrestling and boxing amusements in the South Sea islands, 314.

X

Xenophon says, that the Persians in his time were thick and fat, 192.

Z

Zanguebar natives are not black. Most of them speak the Arabic language, 209.

Zealand (New) natives friendly; live on the ridges of hills in slight sheds. Natural curiosity, a vast perforated rock, 277. Natives strong and well limbed, active, vigorous, and expert, *ibid*. Colour brown, like that of a Spaniard; hair black; teeth white; features agreeable; mild, gentle, and affectionate to each other; implacable to their enemies; eat them, 278. Both sexes stain their faces and bodies with black spots; men add new ones every year, black furrows. When very young, like the women, they black only their lips, 279. Marks on the face, spiral lines, *ibid*. Dress—net-work and cloth, *ibid*. Ornaments, stripes of dogs fur, 280; *item*, red feathers of the parrot. Bore their ears. Other ornaments, 281. Houses small, furniture scanty; their cookery confined to baking and roasting. Canoes, tools, civil government, 282. Religion, 283; *item*, 312. Polygamy permitted, *ibid*. Colour from pretty deep black to an olive, 316. Round faces; teeth broad, white, and well set; large eyes; hair black and straight. Dress, the same for both sexes; an oblong garment, five feet by four, of a silky flaxen substance, from a sedgy plant. A quantity of the same plant fixed on a string, and cast about the shoulders, serves for an outer garment, as it is made to reach the middle of the thigh, 316. Fix in their

their heads combs and feathers by way of ornament; adorn these with pearls and shell. Wear ear-rings; some of jasper;—pierce the septum of the nose;—wear necklaces;—paint with red ochre and grease;—live in caves, 40 or 50 in a company;—build huts or hovels;—subsist by fishing;—roast or bake their fish;—have no idea of boiling any thing;—build large strong canoes;—breed dogs for eating;—when other fish cannot be had, have recourse to shell fish;—war their principal profession, 318. Express great joy, as well as great grief, by cutting gashes in their cheeks and foreheads, 319. *

Zembla (Nova) inhabitants of, 158. See Varieties, &c. Women of, adorn their ears and noses with pendants of blue stones, 161. Draw blue lines across their forehead and chin, *ibid.* All live under ground buried in smoke, *ibid.* In advanced life are afflicted with blindness, 162. Offer of wives and daughters accounted for, *ibid.*

